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ANNUAL REPORT

1966

HETCH HETCHY WATER SUPPLY, POWER
and
UTILITIES ENGINEERING BUREAU



PUBLIC UTILITIES COMMISSION
CITY AND COUNTY OF SAN FRANCISCO



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CITY AND COUNTY OF SAN FRANCISCO

PUBLIC UTILITIES COMMISSION

A N N U A L R E P O R T

FISCAL YEAR 1965-66

HETCH HETCHY WATER SUPPLY, POWER AND UTILITIES

ENGINEERING BUREAU

AND

BUREAU OF LIGHT, HEAT AND POWER

O. L. MOORE
GENERAL MANAGER

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION



HETCH HETCHY WATER SUPPLY
POWER AND UTILITIES ENGINEERING BUREAU
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SAN FRANCISCO, CALIFORNIA 94101
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September 15, 1966

Subject: ANNUAL REPORT
FISCAL YEAR 1965-66

Mr. James K. Carr
General Manager of Public Utilities
Public Utilities Commission
City and County of San Francisco

Dear Mr. Carr:

The Annual Report of the Hetch Hetchy Water Supply, Power and Utilities Engineering Bureau, and Bureau of Light, Heat and Power for fiscal year ending June 30, 1966 is respectfully submitted.

Approximately \$23 million appropriated this fiscal year was administered for activities of the Department which covered operation, maintenance, engineering and construction. This amount is in addition to funds previously appropriated for construction under way or completed during the year.

Revenue from the sale of water and power was \$17,283,021 compared to total operating expenditures of \$12,491,802. The last total includes bond interest and redemption but does not include funds which were appropriated from revenue for the second phase of the replacement for Moccasin Powerhouse. Hetch Hetchy power for municipal purposes is furnished to City departments at cost---21% below the commercial rates of the local utility---which amounted to a saving for the taxpayers of the City of \$765,473 for 1965-66.

As a result of above-normal runoff in fiscal 1964-65 storage in the City's mountain reservoirs was at a maximum at the commencement of 1965-66. Water requirements for the City and its service area were easily met and optimum power generation was provided from the City's powerhouses through the entire year. Early winter storms provided a good start for the snow-pack. However, precipitation after January 1, 1966 was the lowest in many years. The net result was an 82%-of-normal water year. At year's end 509,767 acre-feet of water were in storage in the mountain reservoirs, 78% of capacity.

Forty-one construction contracts for the Hetch Hetchy Project, San Francisco International Airport and the San Francisco Municipal Transit System in a total bid amount of \$3.2 million were awarded during the year. The value of construction work performed during the year was \$9.6 million with \$2.9 million under current contracts remaining to be completed. The preparation of plans and specifications for an additional \$12.5 million of construction was under way at the fiscal year's end.

On the Hetch Hetchy Project, the Canyon Power Project of the Canyon-Cherry Power Development, financed by a \$54,000,000 bond issue, was nearing completion. The \$4.3 million Robert C. Kirkwood Powerhouse and the \$2.3 million connecting penstock are expected to be in operation by the end of calendar year 1966.

Construction at San Francisco International Airport continued at an accelerated rate in order to keep pace with increases in passenger and air cargo traffic. The \$8 million four-level parking garage (2,750 automobile capacity) located within the terminal complex was completed and commenced operation on October 16, 1965. The renovation of the Central Terminal was virtually completed at year's end at a cost of \$1.5 million. Improvements were made to both terminals in order to expedite baggage handling and increase efficiency. The new Pier FF, which is the second leg of the Y-shaped concourse at the South Terminal, was being rushed to completion. A number of other improvements at the Airport were completed or under way. These include the commencement of removal of obstacles for the future conversion of Runway 10R-28L to an instrument runway, repaving of runways and taxiways, improvement in the handling of industrial wastes, increased electrical capacity, completion of a fourth air cargo building and improved directional signs. A number of studies were made to locate a heliport in San Francisco.

Preparations were made for submission of a \$95.5 million bond issue authorization to the City's electorate at the November, 1966 election for further Airport expansion. Projects included in the bond issue are a new North Terminal, completion of the parking garage to its ultimate 8,000-automobile capacity, construction of interim and permanent air cargo facilities, improvements to runways and taxiways and necessary roads and utilities. At year's end the new Airport Master Plan was being considered for adoption by the Public Utilities Commission. The proposed bond issue would complete the initial program of the master plan submitted by the City's consultants.

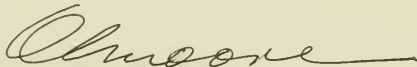
Several minor improvements were made to the operating properties of San Francisco's Municipal Transit System. Studies and surveys were made for the necessary alterations, relocations and modifications which will be required during the coming construction of the Bay Area Rapid Transit District (BARTD) system within San Francisco. Close liaison has been maintained with BARTD for the purpose of assuring proper provision of facilities for Muni in BARTD construction. The Department continued its participation in the Bay Area transit study under the Northern California Transit Demonstration Project (two-thirds Federally financed) which is a joint venture of BARTD, Muni and the Alameda-Contra Costa Transit District.

Preparations were made for the submission of a \$96.5 million bond issue proposal to the voters of San Francisco at the November, 1966 election. This bond issue would finance a six-year modernization program for the Municipal Railway providing for acquisition of new rolling stock and improvement of operating properties.

The program for the modernization of street lighting in overhead districts continued. To date, 18,000 mercury vapor units have been installed to replace obsolete incandescent lights. The total number of street lights in service was increased by 2,024 units to a total of 35,236 as of June 30, 1966.

The substantial accomplishments which are described in detail in this annual report reflect the loyalty and diligence of employees of this Department and to them we express our sincerest appreciation.

Very truly yours,

A handwritten signature in dark ink, appearing to read "O. L. Moore", with a long, sweeping horizontal line extending to the right.

O. L. MOORE

General Manager

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HETCH HETCHY WATER SUPPLY AND POWER SYSTEM

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ANNUAL REPORT

I. ORGANIZATION AND FUNCTIONS

HETCH HETCHY WATER SUPPLY, POWER AND UTILITIES ENGINEERING BUREAU and BUREAU OF LIGHT, HEAT AND POWER serves the City and County of San Francisco in the dual function of an operating department and a service bureau under policies established by the San Francisco Public Utilities Commission.

Hetch Hetchy Water Supply and Power System, an operating unit, encompasses a municipally-owned system of storage reservoirs and aqueducts which collects water from the Tuolumne River watershed in California's Sierra Nevada Mountains and delivers it to the San Francisco Water Department. Approximately three-fourths of the water supplied in San Francisco and the Water Department service area comes from this source. Hetch Hetchy also operates and maintains hydroelectric generating stations and high voltage transmission lines for the production and distribution of electric energy, a by-product of its major function.

The Utilities Engineering Bureau, a service bureau, provides engineering services for Hetch Hetchy, San Francisco International Airport, and San Francisco Municipal Transit System and is responsible for design and construction of all improvements for these utilities.

The Bureau of Light, Heat and Power arranges, under contracts, for furnishing electric, gas, and steam services to municipal departments and handles the monthly billing. It also supervises planning and improvements of street lighting furnished by Pacific Gas and Electric Company and administers contracts for street lighting operation and maintenance. Financing, design, and construction of City-owned street lighting improvements are under jurisdiction of Department of Public Works. In accordance with provisions of the City and County Charter and the Administrative Code, plans for these improvements must be approved by the Public Utilities Commission through this Bureau.

For fiscal year 1965-66, the Department administered budgeted funds for operation, maintenance, engineering, and construction as follows:

<u>Budget</u>	<u>No. of Employees</u>	<u>Total Amount Appropriated</u>
Hetch Hetchy Project	117	\$16,595,943
Utilities Engineering Bureau	157	568,582
Bureau of Light, Heat and Power	12	5,145,397
1955 Hetch Hetchy Power Bond Fund	--	409,523 *
1956 Airport Bond Fund	--	113,555 *
1961 Municipal Water System Bond Fund	--	268,342 *
1962 Airport Bond Fund	--	123,490 *
		<hr/>
		\$23,224,832
Less budget transfer duplications		302,327
		<hr/>
TOTAL	286	\$22,922,505

* Does not include funds previously appropriated for construction under way or completed during fiscal year 1965-66.

II. HETCH HETCHY WATER SUPPLY AND POWER SYSTEM

Description

The primary source of water for the people of the City and County of San Francisco originates on the upper Tuolumne River watershed of the western slope of the Sierra Nevada Mountains, approximately 150 miles easterly of the San Francisco Bay Area. The City's water development is known as the Hetch Hetchy Project. Local sources of water in San Mateo, northern Santa Clara and southern Alameda Counties supplement this supply from the mountains. In addition to furnishing municipal and industrial water to the City's inhabitants Hetch Hetchy also provides for the needs of a number of communities in San Mateo, Santa Clara and Alameda Counties which comprise San Francisco's service area.

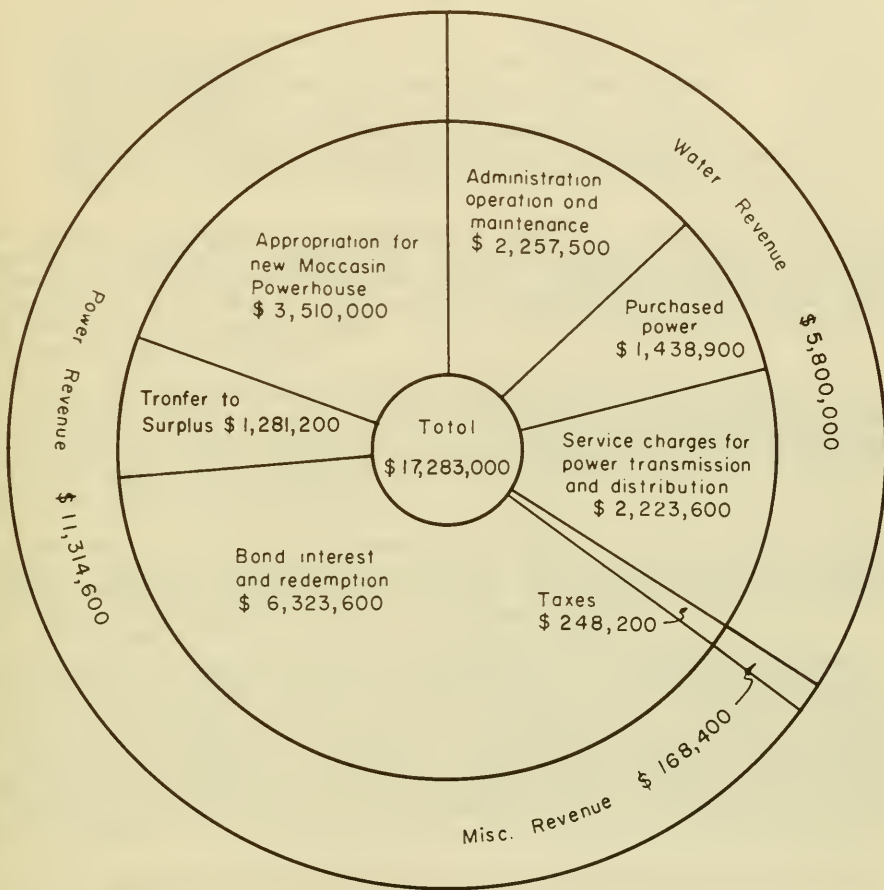
As a by-product of the water supply function, electrical energy is generated at City powerhouses on the Hetch Hetchy Project. The power is conveyed to San Francisco over transmission lines of the City and those of the Pacific Gas and Electric Company under a wheeling agreement. This electrical energy is utilized to meet the requirements of the municipal transit system, international airport, water supply pumping stations, street lighting, public buildings and other municipal needs. Electrical energy surplus to municipal needs is sold to the Turlock and Modesto Irrigation Districts in the San Joaquin Valley to supplement generation in their own plants and, through facilities of the Pacific Gas and Electric Company, to two industrial customers in Santa Clara County and two in Contra Costa County. Load requirements in excess of the City's Hetch Hetchy generation are supplied by power and energy purchased from the Pacific Gas and Electric Company.

The Hetch Hetchy Project is self-sustained by revenue from sales of electric power and the wholesale delivery of water to the San Francisco Water Department. The Water Department stores and distributes water to customers in the City and wholesale water to communities in its service area. Power revenues of Hetch Hetchy are applied to reduce the cost of delivered water.

Operating properties of Hetch Hetchy are located in Tuolumne, Stanislaus, San Joaquin, and Alameda Counties. Water supply facilities include: eight dams with appurtenant impounding and regulating reservoirs and diversion works; 67 miles of tunnels; and 106 miles of aqueduct pipelines. Power system facilities include: three powerhouses-Moccasin-70,000 kilowatts, Dion R. Holm-135,000 kilowatts, and Intake-3,600 kilowatts (standby); 190 miles of high voltage transmission lines; substations and switchyards. These facilities also include electric distribution, telephone and radio communication systems for project use.

The power system is being expanded by construction of the second stage of the Canyon-Cherry Power Development financed from the \$54 million, 1955 Hetch Hetchy Power Bonds. The first stage, completed and placed in service in August, 1960, included Cherry Power Tunnel and Dion R. Holm Powerhouse, Intake Switchyard, Warnerville Substation, and the associated transmission system. The second stage, currently under construction, includes Canyon Power Tunnel, Robert C. Kirkwood Powerhouse and appurtenant facilities.

A map showing Hetch Hetchy water supply and power system, together with San Francisco Water Department system, is included in the Appendix.



HETCH HETCHY REVENUES AND EXPENDITURES
FISCAL YEAR 1965-66

Revenue and Expenditures

Revenue from Hetch Hetchy Project operation is derived principally from two sources:

1. Wholesale delivery of water to San Francisco Water Department.
2. Sale of electric power and energy to San Francisco municipal departments, Modesto and Turlock Irrigation Districts in the San Joaquin Valley, and four industrial customers--Kaiser Cement and Gypsum Corporation's cement plant and Kaiser Aluminum & Chemical Corporation's aluminum foil plant, in Santa Clara County; and chemical plants of Dow Chemical Company and Hercules Powder Company, in Contra Costa County.

Revenue from sale of water and for standby service to the San Francisco Water Department was \$5,800,000. Gross sales of electric energy amounted to \$11,314,664, compared to \$10,789,731 during the year 1964-65. Increase in electric revenue was due principally to increase in sales to Modesto and Turlock Irrigation Districts and to municipal departments. Revenue from service orders, rentals, meals, and miscellaneous items was \$168,357.

Power and energy delivered to City departments increased by 6.0 percent this year with 16.8 percent increase for the San Francisco International Airport in particular. Hetch Hetchy power is furnished to City departments at cost, representing a saving to taxpayers for 1965-66 of \$765,473, compared to the cost if supplied by the local investor-owned utility.

During the year \$1,427,210 was expended for purchase of electric power and energy for resale, compared to \$2,144,702 in 1964-65. The decrease resulted from favorable water conditions during the first half of the fiscal year, which enabled the City to operate its generating plants at maximum capability.

Service charges for transmission and distribution of Hetch Hetchy power over facilities of Pacific Gas and Electric Company were under the budget appropriation by \$13,469, despite the fact that budget estimates did not include retention of Hercules Powder Company as a customer. The additional expenditure required for transportation charges as a result of retaining the Hercules load was offset by the savings which resulted from reduction of wheeling charges for Hetch Hetchy power delivered to the San Francisco International Airport, which became effective December 1, 1965.

Interest and redemption costs for the year on outstanding Hetch Hetchy bonds totaled \$6,323,568.

Tables 1, 2 and 6 show comparative data on receipts, expenditures, and sales of water and power from operation of Hetch Hetchy water supply and power system.

Taxes

Taxes for 1965-66 on utility properties under jurisdiction of Hetch Hetchy Project, located outside the City and County of San Francisco, were paid in the following amounts:

<u>Tax-Levying Body</u>	<u>Assessed Value</u>	<u>Taxes Paid</u>
Alameda County	\$ 1,550	\$ 143.94
San Joaquin County	27,770	2,066.76
San Mateo County	2,335	179.40
Stanislaus County	65,370	5,430.78
Tuolumne County	3,526,950 (a)	239,308.70
Banta-Carbona Irrigation District	3,192	127.68
Modesto Irrigation District	13,600	0.00 (b)
Oakdale Irrigation District	12,320	862.40
West Stanislaus Irrigation District	1,800	90.00
		<hr/>
	TOTAL	\$248,209.66

(a) Includes \$3,000,000 assessment for water rights.

(b) Tax rate for fiscal year 1965-66 set at \$0.00.

Water Production and Transmission

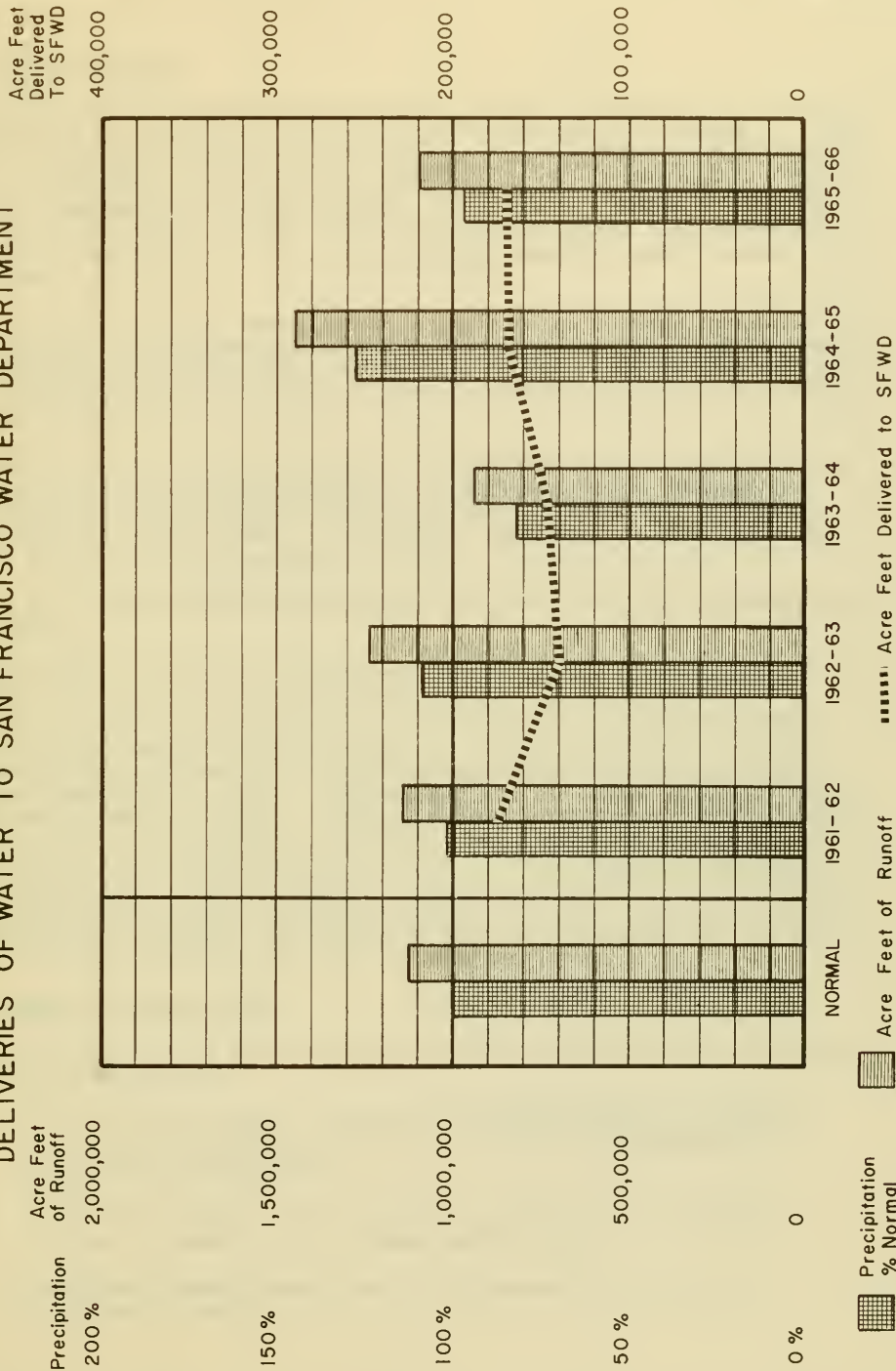
Following the pattern of the previous year early winter precipitation was received on the City's mountain watershed in substantial quantities in December, 1965. There then followed a period of low precipitation during the months of January-March, 1966. February had the lowest precipitation since 1923. This resulted in a sub-normal runoff from the snowmelt during the ensuing months and the year 1965-66 ended in the category of a dry year. Total runoff for the water year ending October 31, 1966 is estimated to be 82% of normal.

Hetch Hetchy Reservoir filled at the earliest date in many years but releases were made in order to prevent spill over the spillway which would adversely affect downstream construction work. Lake Lloyd reached a storage peak of 177,000 acre-feet, or approximately 64% of capacity. All inflow to Lake Eleanor, except for a small required fish release, was diverted to Lake Lloyd through the Eleanor-Cherry Tunnel.

During the year 55,188,500,000 gallons of water were diverted from the Tuolumne River watershed through the Hetch Hetchy Aqueduct for delivery to the San Francisco Water Department. This represented 75.6 percent of the City's total customer consumption. In addition, 165,910,000 gallons were delivered to the United States Atomic Energy Commission at Mocho Shaft of the City's Coast Range Tunnel for use at the Lawrence Radiation Laboratory at Livermore; 6,500,000 gallons were delivered to the Groveland Community Services District in Tuolumne County.

Table 3 shows comparative data on precipitation, runoff, storage and delivery of the Hetch Hetchy Water Supply system.

RUNOFF FROM SAN FRANCISCO'S TUOLUMNE RIVER WATERSHED AND DELIVERIES OF WATER TO SAN FRANCISCO WATER DEPARTMENT



Power System Operation

Because of excellent runoff during the spring of 1965, the beginning of the fiscal year found nearly full capacity storage in all of the mountain reservoirs. Both Moccasin Powerhouse and Dion R. Holm Powerhouse (formerly known as Cherry Powerhouse) were operated at maximum capability during the first nine months. However, with Lake Lloyd and Lake Eleanor far short of filling as a result of subnormal runoff during the spring of 1966, power generation at Dion R. Holm Powerhouse was curtailed, beginning April 1, in order to conserve water for power peaking later in the year.

During the fiscal year, an investigation was made of the hydraulic characteristics of the Mountain Tunnel from Early Intake to Moccasin. The purpose of the study was to determine the effect of various physical conditions on the flow through the tunnel and to determine the economic feasibility of lining sections of the tunnel which are unlined.

Approximately two-thirds of the tunnel is now concrete lined. Field tests were made under two different flows through the tunnel and pressure readings were taken at various points along the tunnel. Analysis of these test data demonstrated that the 19-mile tunnel is in excellent condition, and that additional concrete lining is not economically justified.

Tables 4 to 7 inclusive show comparative operating statistics for the Hetch Hetchy power system.

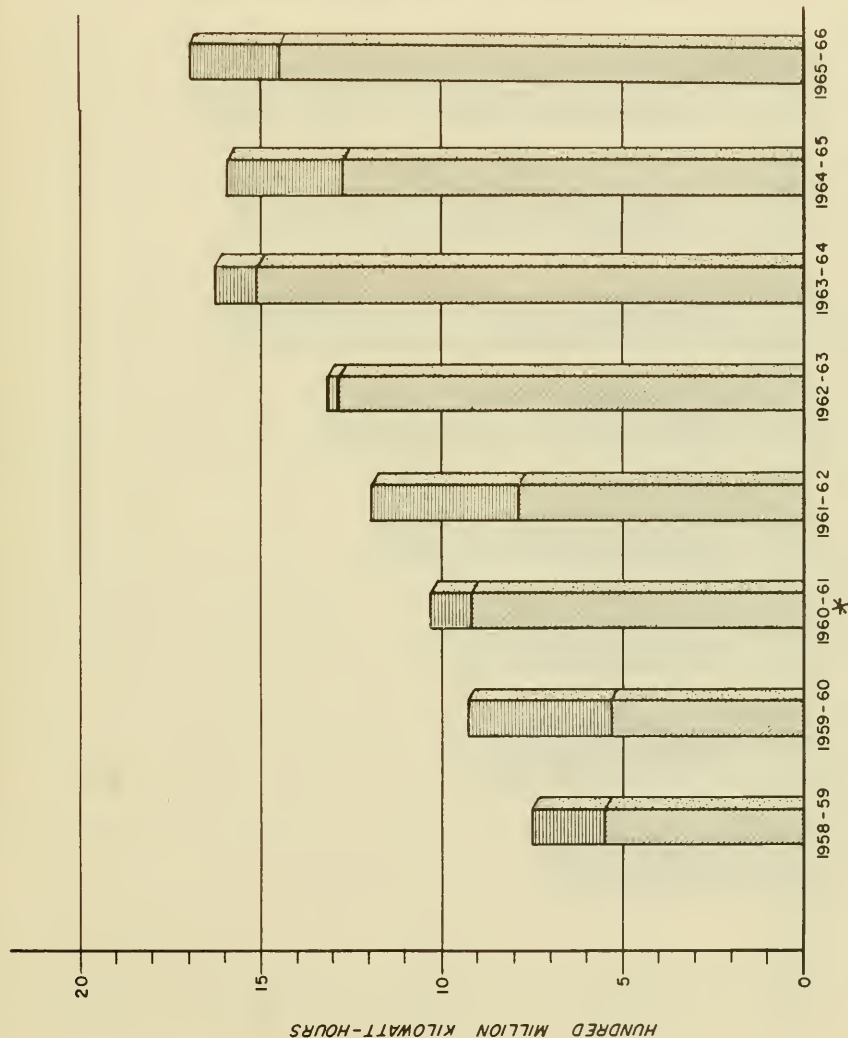
Wheeling Charges to International Airport

Negotiations between the Department and the Pacific Gas and Electric Company resulted in the Company agreeing to reduce the wheeling charges for transporting Hetch Hetchy power over its facilities from Newark Substation to the San Francisco International Airport. The wheeling rate is reduced from 6.671 mills per kilowatt-hour to 2.25 mills, and the stipulated transmission loss is reduced from 17% to 9%. The reduction will amount to an estimated \$4,035,000 for the six and one-half years remaining in the contract or an estimated saving to the City averaging nearly \$629,000 annually. The reduced rates were made effective beginning December 1, 1965. Application of these revised rates was approved by the United States Department of Interior as being in conformance with the Raker Act and also by the California Public Utilities Commission.

Power Marketing and Rate Study

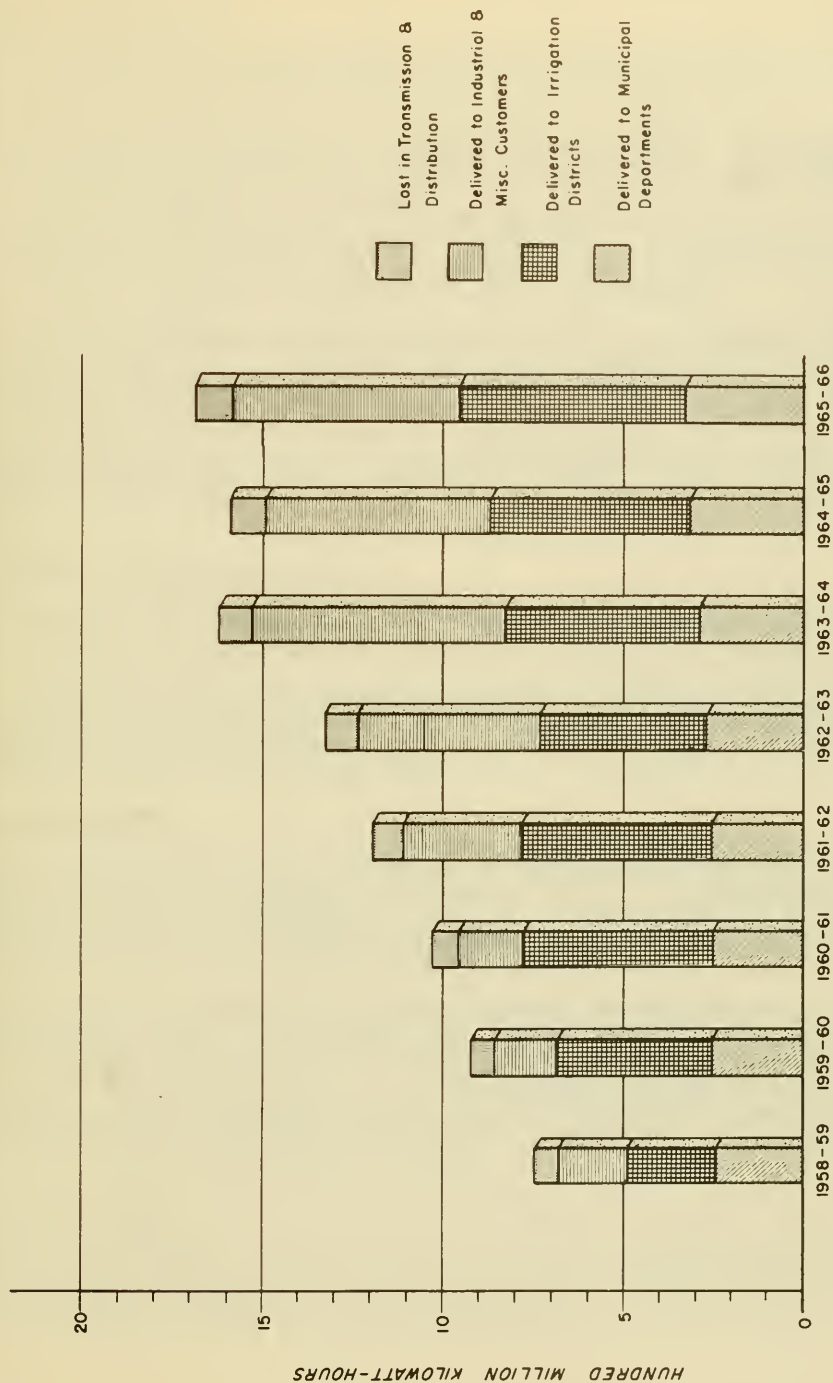
In May, 1966, the firm of R. W. Beck and Associates, Analytical and Consulting Engineers, was engaged to:

1. Assist and advise City in matters relating to marketing of present and future Hetch Hetchy power and energy and the development of contracts incident thereto.
2. Develop and analyze cost to City for production and transmission of power and energy from the Hetch Hetchy Project.
3. Review and develop appropriate rate structures for the sale of Hetch Hetchy power.



HETCH HETCHY ELECTRIC ENERGY — GENERATED AND PURCHASED

DISTRIBUTION OF HETCH HETCHY ELECTRIC ENERGY



Powerhouse Designations

During the year, the San Francisco Public Utilities Commission honored two former City officials by naming Hetch Hetchy Project powerhouses for them.

The Cherry Powerhouse, located near the confluence of the Cherry and Tuolumne Rivers and which began operation in 1960, was designated DION R. HOLM POWERHOUSE. The late Mr. Holm, whose legal achievements as Public Utilities Counsel, from 1932 to 1948, are legendary, rose to even greater heights by virtue of his accomplishments as City Attorney from 1949 through 1961. The development of the Cherry Power Project, from dream to reality, was to a marked degree attributable to the skill with which Mr. Holm handled the legal requirements.

The new Canyon Powerhouse, nearing completion 12 miles below O'Shaughnessy Dam, was designated ROBERT C. KIRKWOOD POWERHOUSE. Mr. Kirkwood served as Manager of Utilities from 1959 until 1964 when his untimely passing terminated a long career of dedicated public service. Prior to assuming that position, he had already established an enviable record as an Assemblyman from Santa Clara County, and as Controller of the State of California. While Manager of Utilities, Mr. Kirkwood devoted many months to conferences with local, State and Federal officials, leading to decisions that initiated construction of the Canyon Power Project.

Improvements to Operating Properties

During the year, the Moccasin Administration Building was reroofed. The existing built-up roofing underneath the tile roof was installed over 40 years ago.

Other improvements include replacement of a portion of the 4-inch domestic water system line at Moccasin Headquarters and the construction of concrete curbs, gutters and driveways at the Oakdale Yard. These two projects were accomplished by personnel from the Operations Division.

Moccasin Powerhouse

Plans and specifications for the replacement of the existing 40-year old Moccasin Powerhouse were about 70% complete at the end of the year. The new plant, to be constructed adjacent to the present one, will be an outdoor type with an initial installation of two 45,000 kilowatt hydroelectric generators utilizing the existing penstocks. Total estimated cost is \$8,830,000.

Contracts for the furnishing of the impulse turbines, governors, turbine shut-off valves and bypass valves, and generators were awarded and the various items were under fabrication during the year. Turbines will be furnished by Hitachi-New York, Ltd. of Japan with generators to be manufactured by Allgemeine Elektrizitäts Gesellschaft (AEG) of Germany. At year's end, specifications were completed and submitted to the City's Purchaser of Supplies for the purchase of the gantry crane, transformers, and oil circuit breakers.

Canyon Power Project

Construction continued on the second phase of the \$54 million Hetch Hetchy power system expansion program, authorized by the electorate of San Francisco in 1955. The first phase was completed in 1960 when Dion R. Holm Powerhouse and the related transmission system were placed in operation.

During the year, construction on Robert C. Kirkwood Powerhouse moved steadily forward. At year's end, the powerhouse structure was complete except for the roof and interior finish. The traveling crane was installed and in limited operation for the start of installation of the generators and appurtenant equipment. The 1,600-foot bypass tunnel with its accompanying river-crossing conduit connecting directly with the Mountain Tunnel was essentially complete, awaiting only the final blast through the rock plug for the "hole-through" which will join the two sections together.

Work also progressed on the excavation and installation of foundation slabs and concrete anchors for the penstock. Due to the difficult and steep topography of the hillside, which is on a 45 degree slope, and to the geological formation of the material, progress was slow. Difficulties were encountered in trying to keep the drilled holes from caving prior to grouting and installation of the pre-stressed "tendons" which are used to hold down the anchors and pipe sections on the steep canyon walls. This contract was about 46% complete at the close of the fiscal year.

As part of the work on the project, the existing bridge over the Tuolumne River at Early Intake was completely redecked, under a \$10,000 contract, in anticipation of hauling heavy equipment loads over it to the powerhouse.

San Joaquin Pipeline No. 3

At the end of the previous fiscal year, the 34-mile section of the planned 47.5 mile San Joaquin Pipeline No. 3, extending between the meter house at Albers Road south of Oakdale (where connection is made to Pipeline Nos. 1 and 2) and Tesla Portal of the Coast Range Tunnel, was placed in operation. Water diversion from the Tuolumne River watershed through the 140-mile system of tunnels and pipelines to the San Francisco service area reached a rate of 225 million gallons a day (mgd), the first time in the history of the Hetch Hetchy Project that the 200 mgd figure has been exceeded.

During the year, engineering efforts were directed toward the design of the last 14½ mile link of the No. 3 Pipeline between Oakdale meter house and Oakdale Portal of the Foothill Tunnel. Separate contracts were also being prepared for the construction of a valve house, installation of a 78" inch butterfly valve, and extension of the manifold at Oakdale Portal plus raising of the existing overflow shaft and modifications to the chlorinating system at Tesla Portal.

At year's end, bids were advertised for the last section of the No. 3 Pipeline, known as Section A. The total estimated cost of \$20 million for the third line is being financed from the Municipal Water System Bonds approved by the electorate in 1961 by a vote of more than 11 to 1.

In connection with State of California construction, the City's three San Joaquin Pipelines were relocated and carried over the 146-foot wide canal of the State Department of Water Resources' California Aqueduct, seven miles south of Tracy, California. Plans and specifications were also completed and awaiting consummation of utilities agreements for the protection of the pipelines at two proposed new State freeway crossings and a county road crossing. All work will be done at State's expense.

Status of Hetch Hetchy Construction Contracts

A summary of Hetch Hetchy construction contracts in progress during fiscal year 1965-66 is shown in Table 16.

New Don Pedro Project

A most significant milestone in the future of San Francisco was passed towards the end of fiscal year 1965-66. The City executed a Fourth Agreement with the Turlock and Modesto Irrigation Districts which provides for the full development of the Tuolumne River as a water supply source by construction of the New Don Pedro Project.

The agreement includes the construction of the New Don Pedro Dam and Reservoir on the Tuolumne River approximately 35 miles east of Modesto where the Tuolumne River emerges from the Sierra foothills.

The reservoir will have a storage capacity of 2,030,000 acre feet and will be backed up behind an earth-rock dam approximately 580 feet high to be constructed approximately one and one-half miles downstream from the Districts' existing Don Pedro Dam, which will be inundated.

The reservoir will provide the additional storage capacity, on an exchange basis, to enable the City to meet its water requirements and those of its service area into the next century. The Districts will gain additional storage to firm up their irrigation requirements and power needs. The United States Army Corps of Engineers by contributing \$5,464,000 to the cost of the Project will acquire the necessary flood control on the Tuolumne River to handle anticipated future flood flows. The State of California will also contribute to the cost for the recreational benefits to be provided by the Project. The State Legislature has authorized an amount of up to \$7,500,000.

Antitrust Actions

Antitrust suits covering ten cases dating back to 1961 against national electrical manufacturing companies for overcharges were successfully concluded. These suits had been filed against manufacturers of equipment sold to the City and County of San Francisco between 1957 and 1959 for construction of Dion R. Holm Powerhouse, Intake Switchyard and Warnerville Substation. The suits alleged conspiracies consisting of artificial price-fixing and collusive-bidding activities, in violation of antitrust laws.

The City was awarded a settlement of \$1,415,310 by the United States District Court on February 23, 1966. The amount of the settlement is to be paid in five annual installments, beginning in 1966. The purchases, totaling \$6 million, on which the settlement was based, involved hydroelectric generators, circuit breakers, power transformers and related equipment.

Another lawsuit covering hydraulic turbines for Dion R. Holm Powerhouse was not involved in this settlement and is still pending.

Settlement of Springs and Wells Damage Claim

In collaboration with the City Attorney's office, the Department was active in settlement of a claim of alleged damage to springs and wells on private properties stemming from the time the City constructed the Foothill Tunnel.

The settlement was made in the amount of \$18,400.00 to Mrs. Edythe R. Banta and Mrs. Nina Chalenor, daughters of the late Luisa Rosasco who filed the original claim.

Two claims of overlying owners between Moccasin and Red Mountain Bar still remain. The City Attorney's office will pursue the matter during the coming year with the goal of settling these claims which have been long outstanding.

Groveland Water Supply

The Groveland Community Services District in Tuolumne County began to receive water from the Hetch Hetchy Aqueduct at Second Garrotte Shaft on November 3, 1965, under a 51-year contract with the City for water service. The water is lifted over 800 feet from the Mountain Tunnel and then enters a pipe line constructed by the District and is conveyed to a large water tank above the town of Groveland and distributed through the existing system.

The new water supply for this historic Mother Lode town which sits astride the Big Oak Flat Road to Yosemite will enhance its opportunity to grow. A laundrette has already commenced operation as a result of vastly improved water quality. Local officials state that restaurants in the town can now prepare a decent cup of coffee. A movement is under way to annex the neighboring community of Big Oak Flat to the District.

Approximately 6,500,000 gallons of water had been delivered to the District by the end of the fiscal year.

III. AIRPORT ENGINEERING AND CONSTRUCTION

General

Many significant projects were initiated or completed at San Francisco International Airport during the past fiscal year. The parking garage, which had been under construction for two years, was dedicated and placed in service. The major interior renovation of the Central Terminal building was virtually complete. Improvements and additions to baggage conveyor systems in the Central and South Terminal buildings were completed. Pier FF, with a five gateroom capacity, was nearing completion, and a fourth air cargo building was completed. The long-awaited instrumentation of Runway 10R-28L for Category II operation was closer to reality. The capacity and reliability of the Airport's electric service were increased, and the first stage of an industrial waste treatment facility was put into operation. These and other facilities were planned, designed, and constructed with funds from Airport Operating revenues, the \$9.8 million 1962 Airport Bond Issue, and the \$25 million 1956 Airport Bond Issue.

A general plan of San Francisco International Airport is included in the Appendix.

Construction Progress

The four-level 2,750 automobile parking garage in the heart of the terminal complex was dedicated on October 15, 1965 and opened for business the next day.

Twelve moving ramps were installed connecting the four levels at both pedestrian centers, and four moving walks were installed in the pedestrian tunnel concourses connecting the two terminal buildings with the pedestrian centers in the garage.

Central Terminal building renovations provided the airline tenants and the public with facilities comparable to those of the South Terminal. A new first floor ticket lobby, a new waiting room on the second floor, an additional elevator serving the first, second, and third floors, and additional baggage conveying facilities on the ground floor were provided by extensive remodeling of walls, ceilings, equipment, and utilities in public areas.

Improvements under several other contracts in the Central Terminal either had been completed or lacked only the finishing touches. Four separate outbound conveyor systems were installed on the south side of the building, connecting the ticket counters of four airlines to the baggage make-up area on the ground floor. Directional signs, ticket counter fascia signs, and concessionaire identification and operational signs were installed on the ground, first, and second floors. The flight announcing system was up-dated with three new record changer consoles and the installation of a priority and control scheme for the entire public address system.

New multi-lingual directional signs were installed in Pier C. Five languages and internationally accepted picture symbols are used on these signs. The portion of Pier C which lies between the Central Terminal building and the hexagon addition was re-roofed.

The South Terminal building was improved with the near-completion of two inbound baggage carousels and feeder conveyor systems, alterations to one outbound conveyor system, and the provision of separate feeder conveyors to two existing carousels. A condensate pump and related piping were added to the central boiler to improve the operation and reduce maintenance of the existing system.

Pier FF and its concourse were two-thirds complete at year's end. Upper level of the pier will provide gateroom areas for five domestic aircraft loading positions, to be served by "jetway" type passenger loading bridges. The lower level will provide 11,000 square feet for airline operations and office facilities. Under a separate contract, a storage room was built at the ground level of Pier FF, and the International Corridor at the upper level of Pier G was extended to accommodate a new "jetway" loading bridge.

Just begun at the end of the year was a contract for the installation of gutters, rainwater leaders, flashing at the duct monitors on the roof, and new expansion joint covers at Piers F and G; also general caulking, flashing, and weather sealing at Piers F and G and the South Terminal building.

A complete exterior signing system for public guidance was installed on the roads and ramps leading to the parking structure and terminal buildings. Landscaping and a concrete curb were installed around Parking Lots 1 and 2, to clearly delineate the areas and to prevent vehicles from leaving the lots at other than the authorized exits.

Pavement and sidewalk at the north ramp of the Central Terminal building were reconstructed to correct changes in grade caused by settlement. Concrete curbs and sidewalk were replaced at various locations at the Central Terminal and lower level road to accommodate changes in grade occasioned by completion of the parking garage. The exit from the Southwest Court was widened to facilitate the turning of buses into the lower level road.

A variety of additions and modifications to the terminal area water and sewerage systems were completed, increasing the operational effectiveness and reliability of these systems. Roadway lighting at the bus waiting station was improved with the addition of a double light electrolier and the replacement of five existing incandescent luminaires with mercury vapor luminaires.

A service road was constructed along the edge of the South Terminal apron to provide safer access for ramp servicing vehicles traveling between the apron and the maintenance base areas south of the main entrance roads.

The major efforts on the landing field were directed towards the great variety of work necessary for the conversion of Runway 10R-28L to Category II instrument landing system approach. The runway is being extended 1,100 feet westerly to provide a total length of 10,600 feet. Reconstruction of pavement was proceeding on Runways 28L and 28R, and also on Taxiways A and F. Fill was placed to enable the Federal Aviation Agency to install a waveguide localizer, an integral component of the instrument landing system planned for the runway. A pile-supported timber trestle was built in the Bay waters at the easterly end of Runway 10R-28L, to provide support for the Federal Aviation Agency's 3,000-foot long approach light system, a middle marker, and two Weather Bureau ceilometers.

The Category II preparations included removing and relocating all obstructions from the clear zone of the extended runway. Hangar No. 4 was converted to a firehouse. The remodeling provided living, training, working, and storage quarters for fire crew and equipment. Certain buildings of the former Pan American maintenance base on Plot 17 were remodeled, and an adjacent area paved, to convert the existing vacant facility into accommodations for the relocated Construction Engineer's office and the Maintenance Building and Yard. At the end of the year contracts were awarded for the demolition and removal of the obstructions in the clear zone, including the Executive Aircraft Terminal, Maintenance Building, Firehouse, and hangars; and for the installation of centerline lighting and runway touchdown zone lighting on Runway 28L to facilitate aircraft landings and takeoffs at night and under adverse weather conditions. Lighting is also to be installed on the high speed exit Taxiway J leading from Runway 28L. Upon completion of all the described work, and the installation of an instrument landing system waveguide localizer and approach light system by the FAA, Runway 28L will be eligible for operation as an instrument runway down to 100-foot cloud ceiling and $\frac{1}{4}$ mile visibility, the lowest minimums presently allowed by FAA.

A test fill for the future extension of Runway 28R was constructed in the Bay waters to determine settlement rates and other conditions affecting the reclamation of these tidelands.

Deteriorated bituminous pavement was excavated from Taxiway D and replaced with concrete pavement, while similar excavated material at Taxiway A was replaced with new bituminous pavement. An overlay of new bituminous surfacing was placed on the existing pavements of Taxiways E and F.

Taxiway R was extended approximately 1,100 feet to serve Plots 10B, 11, and 12, by the construction of pavement and drainage facilities.

To improve the safety of aircraft movement on the ground, two remote controlled signals are being installed along Taxiway F at the intersection of Runway 1L, with the corresponding control console being installed in the tower.

Air Cargo Building No. 4 was completed and placed at the disposal of its tenants. The 120-foot by 220-foot modified pre-fabricated building is aiding in the handling of the tremendous increase in air freight traffic. Pavement and utilities to serve the building were also completed.

Alterations and additions to the heating systems at the former Pan American maintenance base were completed under two contracts. To reduce maintenance and operations costs, the systems were converted from steam to hot water heating, supplemented with electric heating in certain areas.

The capacity and reliability of the Airport's electric service were increased by several major improvements. New 12-kv service feeders from the Millbrae substation of the Pacific Gas and Electric Company to Substation A doubled Airport capacity, and a new cable from Substation C increased capacity for Piers B, C, and D by 50%. Service capacity to the United Air Lines maintenance base was doubled by the installation of cables that connected a new Pacific Gas and Electric Company 5,000-kva transformer to the switchgear of Substation U.

Marked improvement of the quality of industrial waste effluent being discharged into the Bay at the Airport was accomplished with the construction of a 17-acre oxidation pond. Acting as a primary treatment plant, the pond detains industrial and drainage wastes up to a maximum period of 24 days, during which the objectionable chemicals are converted to stabilized non-harmful products.

As an interim measure, pending construction of Pumping Station No. 3, two 36-inch pipes with drainage gates were installed through the levee of the Millbrae High-Level Canal, at its junction with the South Lomita Canal. The pipelines drain South Lomita water into the Millbrae Canal, and will divert water during construction of Pumping Station No. 3.

At Pump Station No. 4, a portion of deteriorated 18-inch corrugated metal drainage pipe was replaced with 18-inch asbestos-cement non-pressure pipe. Old sewage lines were being replaced with new pipe and manholes at Pump Station No. 5. This work supplements earlier television inspection and chemical grouting of the accessible portion of the line.

Pavement deterioration required placement of bituminous surfacing overlay on approximately 3,700 lineal feet of perimeter road, extending from the Coast Guard base to a point approximately 1,100 feet east of the Slick Airways-Butler Aviation Base.

Status of Airport Construction Contracts

A summary of the Airport construction contracts in progress during the fiscal year 1965-66 is shown in Table 17.

Planning For Future Development

Engineering work required for Federal-Aid Airport Program Project No. 9-04-034-C23 was completed in advance of a \$126,000 tentative allocation towards the cost of the project from the Federal Aviation Agency. The major item of work contemplated is the reconstruction of the center 40-foot width of Taxiway E for a distance of approximately 3,250 feet. The deteriorated pavement will be replaced with new concrete and asphaltic pavements. Application for Federal aid involved the preparation of plans, specifications, and cost estimate.

A request for Federal aid was also being prepared for fiscal year 1966-67, covering an aircraft parking apron for the air cargo area, extension of terminal aprons, relocation of Taxiway B, extension of Taxiway H, and installation of taxiway lighting.

Under bid was a contract for open-air Pumping Station No. 3, to be located at the junction of the South Lomita Canal and the Millbrae High-Level Canal. The station will pump drainage waters originating west of the Bayshore Freeway from the South Lomita Canal into the Millbrae Canal, which will then discharge into San Francisco Bay by gravity.

Plans and specifications were nearing completion for the following: alterations to Piers C and D; baggage conveyor system Nos. 7 and 11, in the South Terminal building; addition of a room in the lower level of Pier FF; Unit A of Cargo Building No. 5; and alterations to Sewage Pumping Station No. 2.

Well under way were plans and specifications for the following: an aircraft parking and servicing apron for general aviation use; improvements to the parking garage; pavement and utilities for Unit A of Cargo Building No. 5; floor covering in the Central Terminal building; and additional signs for Pier G.

Other improvements, either under study or in the preliminary stages include: additional signs for the parking garage; alterations to the baggage claims area of the Central Terminal building; multi-lingual directional signs for Pier FF; replacement of gas appliances with electric in the field lighting building; and the installation of a load rheostat for the 1,000-kw generator in the field lighting building.

Preliminary studies were made for interim cargo facilities to accommodate the Boeing 747, a 680,000-pound jet aircraft proposed for 1970-80 commercial service.

The Department's staff aided a team of architectural-engineering consultants in the preparation of a presentation for a proposed \$95.5 million bond issue for Airport development. This would be Phase I of a contemplated two-phase \$376 million expansion by the year 1980, to implement the updated Airport Master Plan developed by the consulting team. The ultimate development would include a third passenger terminal in the central area, a new regional passenger terminal in another location, completion of the parking garage, an air cargo center, runway extensions, and a third east-west runway.

Miscellaneous Engineering

Engineering work for the Airport involved participation in a variety of related activities.

A great amount of attention was given to the search for a suitable heliport site in or near downtown San Francisco. New potential sites were investigated and old alternatives re-studied. Six applications for evaluation of air-space usage and landing areas of promising sites were submitted during the year to the Federal Aviation Agency. The implications of the "air-rights" question were studied, and the value of air rights was estimated for several sites. Department personnel participated in a helicopter flight check of the Transbay Transit Terminal, and exhaustive studies were made of many factors involved with this site. Discussions and meetings were held with the Federal Aviation Agency, the Division of Bay Toll Crossings, the State's San Francisco Port Authority, the Bay Area Rapid Transit District, SFO Helicopters, the Chamber of Commerce, and various City departments.

Field tests were made to determine travel time between various possible heliport sites and several downtown locations. These runs were made at different times of the day to determine the effect of surface traffic congestion on travel time.

At year's end, emphasis was being placed on reconstruction of the former temporary heliport north of the Ferry Building. Application to the Federal Aviation Agency has been filed and estimate of cost to reconstruct decking and pile supports is being made.

Sampling and monitoring of industrial waste discharges from Airport tenants continued, and monthly reports were filed with the State Water Quality Control Board. In April an application was made through this board to the United States Department of Health, Education and Welfare for a \$75,000 grant-in-aid for sewage treatment works at the Airport. Discussions were held with South San Francisco and San Bruno concerning the possible pumping of Airport sewage to the South San Francisco sewage treatment plant. Consultants completed their study on sewage and industrial wastes and the resulting report was distributed.

Scheduled samplings of the north oxidation pond showed that it was performing well. In view of this, plans are being made for the installation of a pumping plant and pressure line to bring the waste water from the Coast Guard area to the pond.

In December a conference was held with representatives of the City of San Bruno and of San Mateo County regarding the proposed San Bruno Creek Flood Control zone.

An agreement for joint use of the Millbrae High-Level Canal was executed with the City of Millbrae which constructed the canal. Under this agreement, the City will build Pumping Station No. 3, to lift drainage waters from the South Lomita Canal into the Millbrae Canal.

An application for permission to construct fill for a new air cargo center at the seaplane harbor at the northern boundary of the Airport was prepared for filing with the Bay Conservation and Development Commission.

Technical assistance was given to many Airport tenants in developing plans for improvements. Tenant plans for \$9,000,000 worth of construction were checked; construction in progress was inspected for compliance with approved plans and specifications, and for conformance to applicable codes and Airport standards. The proposed regulations governing these activities were revised to include plan checking and construction permit fees. Lease drawings for Airport tenants were prepared as required.

Other activities during the year included: the preparation of material for the prosecution of a suit for damages against certain manufacturers of electrical equipment; aiding consultants in a study of the adequacy of standby power at the Airport; preparing material for use in litigation with the Pacific Telephone Company; and reviewing heavy pavement design.

Financing

The \$25 million 1956 Airport bond issue had been nearly exhausted by June 30, 1966. Under this program, which has been supplemented by \$6,075,000 from Federal aid and other sources, \$30,210,000 has been expended for the development of the Airport. An additional \$9,110,000 has been spent under the \$9.8 million 1962 Airport bond issue for the first stage of the multilevel parking garage.

During the year, \$2,458,000 was appropriated from Airport revenue for construction.

Through the Federal Aviation Agency, the Federal government tentatively allocated \$126,000 to the City as its participating share in the reconstruction of Taxiway E. During the year, funds totaling \$248,000 were received from the Federal Aviation Agency for construction work completed under approved grants.

Taxes

The following tabulation shows taxable land area, assessed valuation, and taxes paid for the San Francisco International Airport property in San Mateo County for the fiscal year 1965-66 as compared with the two previous years:

	<u>1963-64</u>	<u>1964-65</u>	<u>1965-66</u>
Total Taxable Area (acres)	4,947.14	4,945.81	4,945.81
Total Assessed Value	\$3,425,225	\$3,373,495	\$3,373,790
Total Amount Taxes Paid	\$ 266,193	\$ 278,032	\$ 238,064

The above tabulation includes taxes imposed by San Mateo County and the Cities of South San Francisco, San Bruno, San Mateo, Burlingame, and Millbrae.

IV. MUNICIPAL TRANSIT SYSTEM ENGINEERING AND CONSTRUCTION

General

During the year, work on the Outer Mission Substation Shelter, alterations to the Money Room at Geary and Presidio Avenue, Paint Shop Ramp at Elkton Yard, and a drainage trough at Ocean Avenue Yard, plus various building improvements were completed.

Construction work during the fiscal year was financed from the Muni Operating Fund and Reconstruction and Replacement Fund. Design and preparation of plans for rehabilitation of Muni properties continued.

Buildings

The roof gutters and downspouts at 24th and Utah Garage were completed. In addition, repairs were made to the roofs of the Turk Street Substation and San Jose Avenue Paint Shop.

At year's end, contracts for the following work had been awarded: roof repairs at Geary Carhouse and Office Building; exterior painting, Turk and Fillmore Substation and Presidio Carhouse; and replacement of fence and related work at Kirkland Yard.

Overhead Construction, 18th Street at Southern Freeway

The City completed the installation of all necessary poles for the temporary detour around 18th Street due to the reconstruction of the 18th Street Viaduct by the State. It is planned to have the detour in operation by September 1, 1966 pending completion of other work for Muni on this contract.

Status Of Municipal Transit System Construction Contracts

A summary of Municipal Transit System construction contracts in progress during fiscal year 1965-66 is shown in Table 18.

1966 Bond Issue Presentation

The Department cooperated with Muni management and Simpson and Curtin, transit consultants for the Northern California Transit Demonstration Project, in the preparation of the "1966 Bond Issue Presentation Report" for the Public Utilities Commission.

The report contains the basis for a \$96.5 million bond issue, proposed for presentation to the City's electorate in November, 1966, which would finance a six-year program for the modernization of the San Francisco Municipal Transit System.

Rapid Transit

During the year applications for Federal grants to the United States Department of Housing and Urban Development (HUD) were prepared for the following capital improvements:

- a. Rapid transit station extensions along Market Street and the Davis Street Station - \$30,000,000
- b. Radio systems for transit vehicles - \$250,000
- c. Washington-Mason Car barn Visitors Gallery - \$90,000
- d. Minibuses (four) - \$30,000

Of the foregoing, HUD has approved and granted \$20,000,000 towards the extensions of the Rapid Transit stations.

The Department participated in the work being accomplished under the Northern California Transit Demonstration Project involving programs for rehabilitation of Muni properties as well as coordination of operations involving Bay Area Rapid Transit District, Alameda-Contra Costa Transit District, and Municipal Railway.

Frequent meetings were held with the Bay Area Rapid Transit District and with the Market Street Development Task Force on various items affecting the operation of the Muni such as traffic routing during construction, station access, platform lengths, relocation of Muni utilities, extending or curtailing existing Muni routes, and design of facilities to be used by Muni in subways and stations.

A significant amount of planning time was utilized during the past year for preparation of cost estimates on the relocation of Muni property and routes in the proximity of proposed freeways to be constructed by the State.

V. STREET LIGHTING

General

The lighting of public streets within the City of San Francisco is provided by facilities in part owned by the City, part furnished by Pacific Gas and Electric Company, and the remainder jointly owned.

During the fiscal year 1965-66, maintenance and repair of City-owned installations were performed under two contracts. One provided for group replacement of lamps in accordance with schedules developed by the Department. A second contract covered work required for repair of defective and damaged equipment, painting, and miscellaneous maintenance.

Under contract, Pacific Gas and Electric Company furnished street lighting service as directed, including the furnishing, maintenance and operation of Company-owned facilities. Certain services were provided also for City-owned facilities, including switching and control, replacement of individual lamps and globes, and emergency work required during other than normal working hours.

Electric energy for all City and Company-owned street light operation was supplied by the Hetch Hetchy power system.

Improvements and additions to lighting in overhead and underground districts continued. Plans were prepared by Bureau of Engineering, Department of Public Works, for rehabilitation of Company-owned lighting in overhead districts, for City-owned facilities in connection with street improvement and undergrounding projects, and for improvements under the 1964 Street Lighting Bond Issue. These plans are submitted to the Public Utilities Commission through the Bureau of Light, Heat and Power for review and approval.

Operation and Maintenance

As of June 30, 1966, a total of 35,236 City-owned and Company-owned street lights were in service in public streets, parks, viaducts, tunnels, and underpasses, an increase of 3,024 during the year. The increase, in major part, resulted from the program for modernization of Company-owned lighting in overhead districts. Improvements and additions to City-owned systems in underground districts also contributed to the increase. A summary of the number and types of units in service at the end of the fiscal year is shown in Table 11.

A total of \$1,179,433 was expended for operation, maintenance, and repair of the street lighting system. The year's cost per unit averaged \$33.45. Of the total cost, \$10,410 was paid by the State for its share of operation and maintenance of street lighting at intersections on City streets which are part of the State highway system.

A summary of expenditures for operation and maintenance of street lighting for the fiscal year is shown in Table 12.

Improvements

The program, inaugurated in 1963, to improve street lighting in overhead districts by modernization of Pacific Gas and Electric Company-owned facilities, was substantially completed. Some 18,000 mercury vapor units of double light output were installed under the program as additions and as replacements of obsolete incandescent lights. With the completion of this program in fiscal 1965-66, San Francisco became one of the best lighted Cities in the Nation.

Modernization of street lighting in underground districts commenced during the year under the \$7 million dollar bond fund authorized by the electorate in 1964. Approximately 7,000 new units will be installed by the City to replace obsolete and inadequate City-owned and Company-owned underground-served lights in the 4-year program. Engineering and contract supervision is performed by the Department of Public Works.

A total of 1,138 new street lights, valued at \$997,571, was added to the City-owned underground system. A summary of these additions is shown in Table 14, and the historical cost of City-owned street lighting construction is shown in Table 15.

Complaints And Damages

During the year, 190 complaints requiring field investigation were received and acted upon. These complaints concerned inadequate illumination, objectionable glare in windows, and requests for relocation of street lighting poles. In addition, there were approximately 750 complaints relating to the modernization program which did not require field investigation because they were resolved at the time of the complaint.

In 1965-66, there were 94 accidents involving damage to City-owned street lighting property. Investigation was made as soon as possible to remove hazards to the public and obstructions to traffic. Every effort was made to secure reimbursement for damages incurred from responsible parties. Total cost of repairs to damaged City-owned street lighting property was \$38,508.

A summary of number of accidents, cost of repairs, and collections is shown in Table 13.

VI. UTILITY SERVICES TO MUNICIPAL DEPARTMENTS

General

Electric energy supplied to municipal departments is generated on the Hetch Hetchy power system and delivered to various service points by transmission and distribution facilities of Pacific Gas and Electric Company under a wheeling contract. Natural gas and steam supplied to municipal departments is furnished by Pacific Gas and Electric Company under a service contract.

Municipal Consumption Of Electricity, Gas And Steam

During the fiscal year 1965-66, a total of 338,564,327 kilowatt-hours of electricity was supplied through 860 accounts for municipal uses, including street lighting and traffic devices. City departments paid to the Hetch Hetchy Project a total of \$3,501,505 for electricity. At the same time, 15,663,385 hundred cubic feet of natural gas was consumed through 511 accounts, and 1,883,200 pounds of steam was utilized by one account, for which Pacific Gas and Electric Company was paid \$859,903 and \$3,761 respectively.

A summary of consumption and expenditures for these commodities is shown in Tables 9 and 10.

San Francisco International Airport

The Department rendered service to San Francisco International Airport in the operation of City-owned electric distribution system within the Airport boundary. This service included supervising installation and testing of the associated metering facilities, performing necessary monthly meter readings, and preparing statements for billing Airport tenants. During the fiscal year, 76 tenants were supplied a total of 74,622,136 kilowatt-hours of electricity through 311 metered and 54 unmetered accounts, for which the Airport Department collected \$939,336. Also, one tenant was supplied 18,938,996 pounds of steam through three meters, for which the Airport Department received \$17,325.

TABLE 1
HETCH HETCHY WATER SUPPLY AND POWER SYSTEM

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES (INCLUDING ENCUMBRANCES)
FISCAL YEAR 1965-66

<u>OE</u>	<u>DESCRIPTION</u>	<u>BUDGET</u>	<u>ACTUAL</u>	<u>-UNDER, OVER</u>
110	Permanent Salaries	\$ 348,928	\$ 332,181	\$-16,747
111	Allowance for Overtime	6,200	6,195	-5
112	Allowance for Holidays	2,288	1,399	-889
113	Extended Work Week	21,103	18,905	-2,198
120	Temporary Salaries	25,733	13,763	-11,970
130	Wages	769,871	763,860	-6,011
139	Salaries - Gardeners	28,050	28,050	-0-
200	Contractual Service	104,460	97,207	-7,253
216	Maint. & Repair of Auto Equipment	33,000	31,148	-1,852
231-1	Purchase of Power for Resale	1,438,900	1,438,900	-0-
231-2	Service Charge for Transm. & Dist.	2,169,600	2,169,600	-0-
251	Subsistence of Employees	8,500	7,166	-1,334
269	Antitrust Actions	6,500	300	-6,200
295	Legislative Expense	1,000	22	-978
300	Material and Supplies	82,127	78,297	-3,830
640	Water Rights and Damage Claims	41,150	25,680	-15,470
641	Hydrography	36,530	34,125	-2,405
801	Accident Compensation	22,010	6,520	-15,490
812	Fidelity Insurance	53	36	-17
813	Automobile Insurance	4,060	2,958	-1,102
814	Fire Insurance	11,500	6,206	-5,294
815	Miscellaneous Insurance	10,000	7,413	-2,587
854	Membership Dues	271	321	50
855	Fee to U.S. Gov't. - Raker Act	30,000	30,000	-0-
856	Maint. Roads & Trails - Raker Act	25,000	12,500	12,500
860	Retirement Allowance	63,911	60,100	3,811
862	Social Security	18,216	18,216	-0-
865	Health Service System	17,298	17,298	-0-
870	Taxes	248,500	248,210	-290
880	Rentals - Transmission Lines	54,000	54,000	-0-
900	Services of Other Depts.	447,556	447,556	-0-
TOTAL OPERATION AND MAINTENANCE		\$6,076,315	\$5,958,132	\$-118,183
400	Equipment	48,670	42,460	-6,210
500	Additions and Betterments	1,200	1,200*	-0-
700	Reconstruction and Replacement	167,652	167,652*	-0-
	Replacement of Moccasin Powerhouse	3,510,000	3,510,000**	-0-
800	Bond Interest and Redemption	6,793,306	6,323,568	-469,738
TOTAL		<u>\$16,595,943</u>	<u>\$16,001,812</u>	<u>\$-594,131</u>

* Unexpended balance transferred to unallocated balance of appropriation.

** Includes expenditures, encumbrances, and unencumbered balance allocated for subsequent construction.

TABLE 2
HETCH HETCHY WATER SUPPLY AND POWER SYSTEM

SUMMARY OF RECEIPTS AND EXPENDITURES
FISCAL YEAR 1965-66

	<u>BUDGET</u>	<u>ACTUAL</u>	<u>-UNDER OVER</u>
<u>RECEIPTS</u>			
Revenue from Sale of Electric Energy	\$10,268,000	\$11,314,664	\$1,046,664
Revenue from Sale of Water and Standby Charge, SFWD	5,800,000	5,800,000	-0-
Other Revenue	65,000	168,357	103,357
	<hr/>	<hr/>	<hr/>
Total Gross Revenue	\$16,133,000	\$17,283,021	\$1,150,021
Surplus from Prior Years	462,943	-0-	-462,943
	<hr/>	<hr/>	<hr/>
Total Receipts	<u>\$16,595,943</u>	<u>\$17,283,021</u>	<u>\$ 687,078</u>
 <u>EXPENDITURES</u>			
Total Expenditures (from Table 1)	<u>\$16,595,943</u>	<u>\$16,001,812</u>	<u>\$-594,131</u>
 <u>EXCESS OF REVENUES OVER EXPENDITURES</u>			
	<u>-0-</u>	<u>\$1,281,209</u>	<u>\$1,281,209</u>

TABLE 3
HETCH HETCHY WATER SUPPLY
PRECIPITATION, RUNOFF, STORAGE AND DELIVERY
AS OF JUNE 30 BY FISCAL YEARS

SEASON PRECIPITATION (INCHES)	1961-62	19 62-63	1963-64	1964-65	1965-66
Normal					
Hetch Hetchy	33.81	40.08	25.28	41.33	30.20
Lake Lloyd	44.68	52.33	34.95	60.16	33.28
Approx. Percent of Normal	99%	118%	75%	123%	89%
WATERSHED RUNOFF (ACRE-FT.) (a)					
Hetch Hetchy	715,300	787,200	596,200	879,800	718,900
Lake Lloyd)	418,300	444,800	338,100	569,100	377,000
Lake Eleanor)					
Total	1,133,600	1,232,000	934,300	1,448,900	1,095,900
Approx. Percent of Normal	101%	109%	82%	128%	97%
RESERVOIR STORAGE (ACRE-FT.) (a)					
No-Spill					
Capacity					
Hetch Hetchy	355,244	353,480	337,935	318,089	344,322
Lake Lloyd	248,577	266,112	117,406	233,368	159,420
Lake Eleanor	26,436	25,681	8,946	26,339	6,025
Total	630,257	645,273	464,287	577,796	509,767
DELIVERY TO SFWD (ACRE-FT.) (a) (b)					
Average per day	482	386	405	461	465
Maximum per day	502	494	533	530	697
Total for fiscal year	175,903	140,769	148,287	168,405	169,875

Total since operation of Hetch Hetchy Aqueduct began in 1934

2,655,695

NOTES: (a) One acre-foot equals 325,900 gallons or approximately 1/3 million gallons.
(b) Includes delivery to Livermore site, U. S. Atomic Energy Commission.

TABLE 4
HETCH HETCHY POWER SYSTEM

ELECTRIC ENERGY GENERATED, PURCHASED, AND DISTRIBUTED
FISCAL YEAR 1965-66

<u>PLANT DATA</u>	<u>Rated Capacity</u> <u>(Kilowatts)</u>	<u>Peak Generation</u> <u>(Kilowatts)</u>	<u>Annual Plant</u> <u>Factor - %</u>
Moccasin Powerhouse	70,000	82,000	85.3
Dion R. Holm Powerhouse	135,000	150,000	78.5
Early Intake Powerhouse (Standby)	<u>3,600</u>	---	---
Total	208,600		

ENERGY GENERATED AND PURCHASED (KILOWATT-HOURS)

Gross Generation

Moccasin Powerhouse	522,825,000	
Dion R. Holm Powerhouse	919,943,000	
Early Intake Powerhouse (Standby)	<u>0</u>	1,442,768,000

Station Service

Moccasin Powerhouse	818,300	
Dion R. Holm Powerhouse	1,238,570	
Early Intake Powerhouse (Standby)	<u>0</u>	<u>2,056,870</u>

Net Generation

1,440,711,130

Supplementary Energy

P.G. & E. Co. (Replacement)	18,140,548	
P.G. & E. Co. (Purchase)	<u>233,397,451</u>	<u>251,537,999</u>

Total

1,692,249,129

ENERGY DISTRIBUTED (KILOWATT-HOURS)

Sales

Municipal Accounts	338,564,327
Modesto Irrigation District	454,291,800
Turlock Irrigation District	173,064,904
Kaiser Cement & Gypsum Corporation	163,529,750
Kaiser Aluminum and Chemical Corporation	16,968,000
Dow Chemical Company	309,582,408
Hercules Powder Company	138,762,000
Miscellaneous Customers	1,294,252

Non-Revenue

Project Use	3,306,403
Pacific Gas and Electric Company (Replacement)	0

Losses

Hetch Hetchy System	28,026,891
P.G. & E. System (Municipal and Industrial Accounts)	<u>64,858,394</u>

Total

1,692,249,129

TABLE 5
HETCH HETCHY POWER SYSTEM

COMPARATIVE ELECTRIC ENERGY SALES TO CUSTOMERS
FISCAL YEARS 1964-65 AND 1965-66
(Nearest 100,000 Kilowatt-Hours)

<u>CUSTOMER</u>	<u>1964-65</u>	<u>1965-66</u>
Municipal Accounts		
International Airport	89,500,000	105,600,000
Municipal Railway	67,900,000	67,800,000
Public Works	19,300,000	20,000,000
Street Lighting	37,600,000	39,700,000
Unified School District	21,200,000	23,000,000
Water Department	35,600,000	34,800,000
Other City Departments	44,500,000	47,600,000
Modesto Irrigation District	415,600,000	454,300,000
Turlock Irrigation District	141,800,000	173,100,000
Kaiser Cement & Gypsum Corp.	151,900,000	163,500,000
Kaiser Aluminum and Chemical Corp.	16,000,000	17,000,000
Dow Chemical Company	313,600,000	309,600,000
Hercules Powder Company	134,600,000	138,800,000
All Other Sales	3,700,000	1,300,000
 TOTAL	 <u>1,492,800,000</u>	 <u>1,596,100,000</u>

TABLE 6
HETCH HETCHY POWER SYSTEM

COMPARATIVE GROSS REVENUE RECEIVED FROM SALE OF ELECTRIC ENERGY
FISCAL YEARS 1964-65 AND 1965-66
(Nearest \$1,000)

<u>CUSTOMER</u>	<u>1964-65</u>	<u>1965-66</u>
Municipal Accounts		
International Airport	\$ 743,000	\$ 868,000
Municipal Railway	683,000	679,000
Public Works	239,000	248,000
Street Lighting	400,000	422,000
Unified School District	350,000	373,000
Water Department	311,000	305,000
Other City Departments	577,000	606,000
Modesto Irrigation District	2,249,000	2,379,000
Turlock Irrigation District	795,000	920,000
Kaiser Cement & Gypsum Corp.	1,195,000	1,254,000
Kaiser Aluminum and Chemical Corp.	152,000	163,000
Dow Chemical Company	2,130,000	2,122,000
Hercules Powder Company	917,000	955,000
All Other Sales	49,000	21,000
 TOTAL	 <u>\$10,790,000</u>	 <u>\$11,315,000</u>

TABLE 7
HETCH HETCHY POWER SYSTEM

<u>ELECTRIC ENERGY GENERATED, PURCHASED, AND DISTRIBUTED BY FISCAL YEARS --- KILOWATT-HOURS</u>						
	<u>1960-61</u>	<u>1961-62</u>	<u>1962-63</u>	<u>1963-64</u>	<u>1964-65</u>	<u>1965-66</u>
<u>NET GENERATION</u>						
Moccasin Powerhouse	469,300,100	390,534,500	527,332,900	527,570,400	516,508,000	522,006,700
Dion R. Holm Powerhouse	451,179,360	398,956,200	759,063,980	972,596,880	758,213,880	918,704,430
Early Intake Powerhouse	1,749,306	0	28,990	4,395	8,600	0
Subtotal	922,228,766	789,490,700	1,286,425,870	1,500,171,675	1,274,730,480	1,440,711,130
<u>SUPPLEMENTARY ENERGY</u>						
P.G.& E. Co. (Replacement)	---	---	17,614,531	4,252,209	2,972,600	18,140,548
P.G.& E. Co. (Purchase)	116,235,950	401,108,639	10,765,908	114,717,222	335,040,505	233,397,451
Subtotal	116,235,950	401,108,639	28,380,439	118,969,431	338,013,105	251,537,999
TOTAL	<u>1,038,464,716</u>	<u>1,190,599,339</u>	<u>1,314,806,309</u>	<u>1,619,141,106</u>	<u>1,612,743,585</u>	<u>1,692,249,129</u>
<u>DISTRIBUTION</u>						
<u>Sales</u>						
Municipal Accounts	257,641,932	268,283,987	271,930,805	293,160,152	315,641,672	338,564,327
Modesto Irrig. Dist.	348,864,000	353,976,000	343,344,000	386,283,000	415,564,800	454,291,800
Turlock Irrig. Dist.	169,960,571	170,649,231	118,488,000	151,771,700	141,799,500	173,064,904
Kaiser Cement & Gypsum	140,764,680	141,273,870	138,773,712	155,387,840	151,942,208	163,529,750
Kaiser Aluminum Corp.	13,152,000	13,776,000	14,424,000	14,496,000	15,998,280	16,968,000
Dow Chemical Co.	44,011,368	156,102,552	301,810,584	303,892,152	313,575,384	309,582,408
Hercules Powder Co.	---	---	23,544,000	133,758,000	134,568,000	138,762,000
Shell Chemical Co.	---	---	---	66,618,000	---	---
Misc. Customers	668,872	650,398	9,010,930	12,406,416	3,674,179	1,294,252
P.G.& E. Co. (Dump)	1,060,607	---	---	---	---	---
Non-Revenue Project Use						
P.G.& E. Co. (Replacement)	3,168,162	3,535,696	3,314,272	3,627,929	3,309,842	3,306,403
	---	13,426,572	8,440,168	0	21,113,148	0
Losses	<u>64,172,524</u>	<u>68,925,033</u>	<u>81,725,838</u>	<u>97,739,917</u>	<u>95,556,572</u>	<u>92,885,285</u>
TOTAL	<u>1,038,464,716</u>	<u>1,190,599,339</u>	<u>1,314,806,309</u>	<u>1,619,141,106</u>	<u>1,612,743,585</u>	<u>1,692,249,129</u>

TABLE 8
BUREAU OF LIGHT, HEAT AND POWER

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES AND RECEIPTS
(INCLUDING ENCUMBRANCES)

FISCAL YEAR 1965-66

<u>OE</u>	<u>DESCRIPTION</u>	<u>BUDGET</u>	<u>ACTUAL</u>	<u>-UNDER OVER</u>
<u>EXPENDITURES</u>				
110	Permanent Salaries	\$ 107,875	\$105,879	\$-1,996
111	Allowance for Overtime	750	445	-305
200	Contractual Services	2,985	1,547	-1,438
231	Lighting and Heating of			
	Public Buildings - General	939,560	918,801	-20,759
231-1	Lighting and Heating of			
	Public Bldgs. - Special Funds	3,027,737	3,174,403	146,666
231-2	Lighting of Public Streets -			
	Pacific Gas and Electric Co.	660,379	639,812	-20,567
231-3	Lighting of Public Streets -			
	Hetch Hetchy	392,524	409,060	16,536
300	Materials and Supplies	725	683	-42
400	Equipment	2,400	2,295	-105
813	Auto Insurance	300	215	-85
860	Retirement Allowance	5,598	5,598	-0-
862	Social Security	1,980	1,980	-0-
865	Health Service System	2,584	2,064	-520
	TOTAL	<u>\$5,145,397</u>	<u>\$5,262,782</u>	<u>\$117,385</u>

RECEIPTS

Interfund Receipts *	\$3,136,947	\$3,149,972	\$ 13,025
Ad Valorem Taxes	2,008,450	2,112,810	104,360
TOTAL	<u>\$5,145,397</u>	<u>\$5,262,782</u>	<u>\$117,385</u>

WORK ORDER APPROPRIATIONS FROM ROAD FUND

<u>DESCRIPTION</u>	<u>TOTAL FUNDS</u>	<u>EXPENDITURE</u>	<u>-UNDER OVER</u>
Alteration and Repair of			
Street Lighting Structures	\$ 3,000	\$ 3,000	-0-
Maintenance and Repair of			
Street Lighting Installations	94,700	93,660	\$-1,040
TOTAL	<u>\$97,700</u>	<u>\$96,660</u>	<u>\$-1,040</u>

* Transfers from other departments.

TABLE 9
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURE FOR ELECTRICITY FOR MUNICIPAL PURPOSES
FISCAL YEAR 1965-66

<u>DEPARTMENT</u>	<u>NO. OF ACCOUNTS</u>	<u>CONSUMPTION KILOWATT-HOURS</u>	<u>EXPENDITURE</u>
Art Museum	1	554,325	\$ 6,778
Auditorium and Brooks Hall	5	4,549,358	49,211
Child Care Centers	8	79,534	2,028
City Planning	1	71,960	1,490
DeYoung Museum	5	868,090	11,103
Disaster Corps	2	2,422	100
Electricity	5	416,609	7,304
Farmers Market	1	9,524	245
Fire (a)	56	1,991,979	44,000
Hassler Health Home	1	715,560	7,904
Health	22	7,583,805	76,268
Hetch Hetchy	8	92,351	2,742
International Airport (Incl.resale)	8	105,602,795	867,607
Legion of Honor	5	319,650	6,089
Library	34	2,426,269	40,593
Log Cabin Ranch	11	266,686	7,553
Municipal Railway	39	67,768,131	678,997
Parking Authority	5	11,776	335
Police	18	570,831	12,327
Public Buildings	7	11,909,734	109,557
Public Works	49	20,067,126	243,821
Purchasing	6	376,270	6,116
Record Center	1	510	19
Recreation and Park	196	8,583,456	143,794
Sheriff	2	1,305,280	12,599
Social Services	5	709,127	9,685
Street Lighting Operations	-	39,735,149	411,348
Unified School District	241	22,980,706	372,962
War Memorial	1	937,275	12,523
Water	110	34,793,577	305,472
Youth Guidance	1	1,271,280	13,589
 TOTAL MUNICIPAL DEPARTMENTS	 854	 336,571,145	 \$3,464,159
Academy of Sciences	4	1,993,182	21,004
Mount Davidson Cross Lighting	-	(b)	1,300
State of Calif.: Street Lighting	1	(c)	10,410
Traffic Devices	1	(d)	4,632
 TOTAL FROM HETCH HETCHY	 860	 338,564,327	 \$3,501,505
Fire Dept., For Resale to Fort Mason	1	3,414,882	38,315
 GRAND TOTAL	 <u>861</u>	 <u>341,979,209</u>	 <u>\$3,539,820</u>

NOTES: (a) Electricity purchased for resale to Fort Mason excluded.
 (b) Included under Recreation and Park.
 (c) Included under Street Lighting Operations.
 (d) Included under Public Works.

TABLE 10
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURE FOR GAS AND STEAM FOR MUNICIPAL PURPOSES
FISCAL YEAR 1965-66

NATURAL GAS

<u>DEPARTMENT</u>	<u>NO. OF ACCOUNTS</u>	<u>CONSUMPTION HUNDRED CU. FT.</u>	<u>EXPENDITURE</u>
Auditorium and Brooks Hall	2	631	\$ 66
Child Care Centers	8	26,263	1,767
City Planning	1	5,756	376
DeYoung Museum	2	84,493	4,602
Disaster Corps	1	360	36
Electricity	2	52,982	3,306
Farmers Market	1	402	39
Fire	57	641,719	39,685
Hassler Health Home	3	281,204	17,666
Health	19	3,767,975	177,732
Hetch Hetchy	2	2,182	185
International Airport	15	1,933,610	93,484
Library	28	93,858	6,269
Municipal Railway	13	241,045	15,101
Police	10	52,885	3,449
Public Buildings	4	1,279,878	64,127
Public Works	11	329,130	23,026
Purchasing	3	61,092	3,727
Recreation and Park	100	1,178,789	73,492
Registrar of Voters	1	9,823	626
Sheriff	2	375,528	19,591
Single Men's Rehabilitation Center	1	35,379	2,252
Social Services	3	35,799	2,245
Unified School District	202	4,241,979	255,315
War Memorial	3	209,406	12,914
Water	13	94,767	6,167
Youth Guidance	2	420,794	21,648
TOTAL MUNICIPAL DEPARTMENTS	509	15,457,728	\$848,893
Academy of Sciences	2	205,657	11,010
GRAND TOTAL	<u>511</u>	<u>15,663,385</u>	<u>\$859,903</u>

STEAM

(Does not include steam generated by City)

<u>DEPARTMENT</u>	<u>NO. OF ACCOUNTS</u>	<u>CONSUMPTION POUNDS</u>	<u>EXPENDITURE</u>
Social Services	1	1,883,200	\$ 3,761

TABLE 11
BUREAU OF LIGHT, HEAT AND POWER

STREET LIGHTS IN SERVICE
JUNE 30, 1966

<u>SIZE & TYPE OF LAMP</u>	<u>COMPANY- OWNED</u>	<u>JOINTLY- OWNED</u>	<u>CITY- OWNED</u>	<u>TOTAL</u>
<u>UNDERGROUND CONNECTED</u>				
<u>High Voltage Series Circuit</u>				
1,000-Lumen Incandescent	--	22	--	22
2,500 " "	315	29	423	767
4,000 " "	1,994	482	2,678	5,154
6,000 " "	741	602	4,617	5,960
10,000 " "	398	--	570	968
23,000 " Fluorescent	3	--	15	18
175-Watt Mercury Vapor	--	--	24	24
400 " "	13	44	139	196
1,000 " "	--	--	3	3
<u>Low Voltage Multiple Circuit</u>				
1,000-Lumen Incandescent	--	--	173	173
2,500 " "	18	4	62	84
4,000 " "	289	3	84	376
6,000 " "	81	9	88	178
10,000 " "	6	--	16	22
5,500 " Fluorescent	--	--	7	7
23,000 " "	38	--	95	133
100-Watt Mercury Vapor	--	--	9	9
175 " "	9	--	773	782
250 " "	30	--	85	115
400 " "	893	--	1,040	1,933
700 " "	--	--	42	42
1,000 " "	--	--	15	15
<u>OVERHEAD CONNECTED</u>				
<u>High Voltage Series Circuit</u>				
2,500-Lumen Incandescent	13	--	--	13
4,000 " "	200	--	42	242
6,000 " "	11	--	1	12
<u>Low Voltage Multiple Circuit</u>				
2,500-Lumen Incandescent	25	--	--	25
4,000 " "	99	--	12	111
6,000 " "	6	--	--	6
10,000 " "	--	--	1	1
175-Watt Mercury Vapor	15,133	--	--	15,133
250 " "	1,931	--	2	1,933
400 " "	800	--	6	806
TOTAL, JUNE 30, 1966	<u>23,046</u>	<u>1,195</u>	<u>11,022</u>	<u>35,263</u>
	65.35%	3.39%	31.26%	100%
TOTAL, JUNE 30, 1965	21,571	1,453	10,215	33,239
NET CHANGE DURING THE YEAR	+1,475	-258	+807	+2,024

TABLE 12
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURES FOR OPERATION AND MAINTENANCE OF STREET LIGHTING
FISCAL YEAR 1965-66

CONTRACTUAL SERVICE

P. G. & E. Company

Company-owned facilities (a)	\$891,811		
Jointly-owned facilities (a)	60,087		
City-owned facilities (b)	222,351		
Emergency service to City-owned facilities	<u>3,969</u>	\$1,178,218	
Less deduction for energy component		<u>509,072</u>	\$ 669,146

Lease-Lite Corporation

Group lamp replacement - City-owned facilities			28,839
--	--	--	--------

Lease-Lite Corporation

Maintenance and repair - City-owned facilities			
Routine maintenance	8,806		
Repair of damage caused by accidents (c)	23,220		
Repair of damage caused by equipment failure	<u>18,214</u>		50,240

MATERIAL AND SUPPLIES (FURNISHED BY CITY)

Damage caused by accidents (c)	5,024		
Damage caused by equipment failure	<u>3,978</u>		9,002

ELECTRIC ENERGY (HETCH HETCHY)

39,735,149 kwh @ \$0.01345 less 21% discount			<u>422,206</u>
--	--	--	----------------

TOTAL EXPENDITURE			\$1,179,433
-------------------	--	--	-------------

LESS AMOUNT PAID TO HETCH HETCHY FROM:

Gas Tax Funds for State Highway routes	10,410		
Recreation and Park Dept. for off-street lighting	<u>448</u>		<u>10,858</u>

TOTAL NET EXPENDITURE			<u><u>\$1,168,575</u></u>
-----------------------	--	--	---------------------------

AVERAGE OPERATING COST

Based on number of lights in service June 30, 1966, average total cost of operation, maintenance and repair per light per year:			<u><u>\$33.45</u></u>
---	--	--	-----------------------

- NOTES: (a) Includes maintenance, repair, fixed charges and electric energy for Company-owned facilities.
- (b) Includes replacement of individual lamps and broken glassware, service and switching charges, and electric energy.
- (c) When responsible party is known, claim is filed for recovery of costs. (See Table 13.)

TABLE 13
BUREAU OF LIGHT, HEAT AND POWER

ACCIDENT DAMAGE TO CITY-OWNED STREET LIGHTING
BY FISCAL YEARS

	<u>1962-63</u>	<u>1963-64</u>	<u>1964-65</u>	<u>1965-66</u>
Number of Accidents	85	91	100	94
Cost of Damage Repairs (a)	\$35,323	\$39,748	\$44,768	\$38,508 (b)
Average Cost Per Accident	416	437	448	353 (b)
Amount Billed Responsible Parties (c)	27,818	23,759	50,441	25,052
Amount Collected:				
By Bureau of Light, Heat and Power	11,070	15,995	14,825	10,566
By Bureau of Delinquent Revenue (d) (e)	8,658	7,803	3,741	11,237
Amount Abandoned (Uncollectible)	4,269	9,096	9,935	15,430
Amount Receivable June 30:				
Payable to Bureau of Light, Heat and Power	3,982	3,810	12,923	12,553
Payable to Bureau of Delinquent Revenue (e)	25,605	13,749	35,564	38,762

NOTES: (a) Includes administrative expense.

(b) Includes estimated cost of uncompleted work as of June 30, 1966.

(c) Includes only cases of current and previous year for which work was completed during the year.

(d) Includes installment payments on cases from previous years.

(e) Accounts are transferred to Bureau of Delinquent Revenue when:

1. Account is over 90 days old;
2. Installment payments are made;
3. Liability is denied;
4. Responsible party is deceased or his whereabouts unknown.

TABLE 14
BUREAU OF LIGHT, HEAT AND POWER

NEW CITY-OWNED STREET LIGHTING INSTALLATIONS
COMPLETED DURING FISCAL YEAR 1965-66

<u>Location</u>	<u>No. of Lights</u>	<u>Type of Light (a)</u>	<u>Value</u>
Financed by State Gasoline Tax:			
Beaumont Ave. at Lone Mountain	1	M	\$ 986
Bosworth St. - Diamond to Lippard	28	M	30,100
Bret Harte Terrace	2	I	444
California and Mason Sts.	4	M	3,600
Clipper St. - Diamond to Portola	12	M	10,136
Crestmont Drive	4	I	3,959
Faith St. Underpass	10	F	5,170
Francisco Heights - Stage I	17	M	11,967
Geneva Ave. - Alemany to San Jose Ave.	29	M	28,475
Golden Gate Heights	7	M	6,763
Judson Ave. - Phelan to Foerster	19	M	14,812
Marina District - Stage II	36	M	34,030
Marina District - Stages III and IV	77	M	83,650
Market St. at Castro	5	M	8,500
Mason St. - Jefferson to North Point	3	M	3,606
Parker, Turk, Masonic	32	M	33,196
Telegraph Hill - Stages II and III	16	M	10,537
Thornton Underpass	1	M	600
Various Intersections	95	M	75,046
Western Addition	81	M	72,095
3rd and King Sts.	1	M	600
14th St. - Market to Buena Vista	<u>27</u>	M	<u>36,400</u>
TOTAL	507		\$474,672
Financed by 1964 Street Lighting Bonds:			
Broadway - Davis to Powell	43	M	\$ 31,875
Brotherhood Way - Lake Merced to Junipero Serra	46	M	23,770
Clipper St. - Diamond to Portola	10	M	9,895
Great Highway - Point Lobos to Lincoln	50	M	61,853
Haight St. - Gough to Stanyan	86	M	53,107
Mission St. - Army to Cortland	22	M	13,645
St. Mary's Park	55	M	49,000
Westwood Highlands	92	M	90,912
Westwood Park	168	M	154,534
Mission St. - Silver to Geneva	<u>59</u>	M	<u>34,308</u>
TOTAL	631		\$522,899
GRAND TOTAL	<u>1,138</u>		<u>\$997,571</u>

NOTES: (a) F - Fluorescent
I - Incandescent
M - Mercury Vapor

TABLE 15
BUREAU OF LIGHT, HEAT AND POWER

HISTORICAL COST OF CITY-OWNED STREET LIGHTING IMPROVEMENTS

<u>Fiscal Year</u>	<u>Ad Valorem Taxes</u>	<u>Gasoline Taxes</u>	<u>Street Lighting Bonds</u>	<u>Property Owners</u>	<u>State Highway Dept.</u>	<u>Miscellaneous Sources*</u>	<u>Total</u>
Prior to							
July 1, 1947	\$ 640,693	\$ 134,880	-	\$207,660	-	\$449,585	\$1,432,818
1947-48	112,615	76,768	-	112,847	-	15,405	317,635
1948-49	257,652	9,043	-	22,987	-	-	289,682
1949-50	303,629	27,194	-	12,394	-	6,350	349,567
1950-51	155,842	101,576	-	165,043	-	-	422,461
1951-52	27,154	47,698	-	23,695	\$ 22,650	5,806	127,003
1952-53	251,090	219,956	-	31,778	-	505	503,329
1953-54	142,151	22,181	-	23,495	2,274	1,239	191,340
1954-55	115,727	30,817	-	748	16,578	543	164,413
1955-56	15,704	48,620	-	2,484	19,181	1,360	87,349
1956-57	114,168	26,641	-	7,256	-	3,003	151,068
1957-58	2,501	64,942	-	18,199	4,142	-	89,784
1958-59	-	171,367	-	10,231	626	538	182,762
1959-60	-	100,126	-	35,874	10,242	4,083	150,325
1960-61	-	82,074	-	19,236	-	1,865	103,175
1961-62	-	200,113	-	116,376	24,550	7,993	349,032
1962-63	-	84,328	-	21,700	-	-	106,028
1963-64	-	340,108	-	32,556	6,000	-	378,664
1964-65	-	97,846	-	8,975	50,857	-	157,678
1965-66	-	474,673	\$522,899	-	-	-	997,572
TOTAL	\$2,138,926	\$2,360,951	\$522,899	\$873,534	\$157,100	\$498,275	\$6,551,685
LESS:	Cost of portions removed prior to fiscal year 1965-66					195,430	
	Cost of portions removed during fiscal year 1965-66					100,290	295,720
Original Cost of City-owned facilities in service June 30, 1966							\$6,255,964

* Includes WPA & PWA (1935-1942), Boulevard Construction (1932-1934), Municipal Railway, Park and Recreation, and Housing Authority.

TABLE 16
HETCH HETCHY WATER SUPPLY & POWER SYSTEM

CONSTRUCTION CONTRACTS FISCAL YEAR 1965-66					
Contract No.	Description	Contractor	Contract Time Started Completed	Original Contract Price	Value of Work Done During Fiscal Year
HH-331	Synchronous Generators Canyon Powerhouse	Ets-Hokin Corp.	12-2-63 ---	\$ 831,725	\$ 557,373
HH-363	San Joaquin Pipeline No. 3 Cross-Connection & Valves	McGuire & Hester	8-3-64 7-28-65	322,060	452
HH-376	Canyon Powerhouse	Peter Kiewit Sons' Co.	11-2-64 ---	4,293,439	2,917,288
HH-377	Canyon Penstock	J. H. Pomeroy & Co.	6-28-65 ---	2,322,000	1,072,562
HH-378	Bridge Crane for Canyon Powerhouse	Broadline Co.	11-23-64 ---	80,350	29,781
HH-383	Reroof Moccasin Admin. Building	Howard H. Laughlin	7-26-65 8-25-65	5,465	5,165
HH-384	Replace Water Line Moccasin	Hetch Hetchy Water Supply	10-15-65 1-15-66	2,125	2,154
HH-389	Reconstruct Bridge to Canyon Powerhouse	Chas. I. Cunningham Co.	2-7-66 3-7-66	10,333	10,333

(Cont'd)

TABLE 16 - (Cont'd)
HETCH HETCHY WATER SUPPLY & POWER SYSTEM

Purchase Order No.	Description	CONSTRUCTION CONTRACTS FISCAL YEAR 1965-66		Original Contract Price	Value of Work Done During Fiscal Year
		Contractor	Contract Time Started Completed		
48374	Turbines, Governors, Valves, etc., Canyon Powerhouse	Hitachi-New York, Ltd.	8-8-63 ---	\$1,038,679	\$ 898,148
64580	Relief Valve for San Joaquin Pipeline No. 3	Darling Valve & Manufacturing Co.	3-30-64 7-28-65	42,494	10,623
88519	Power Transformers for Canyon Powerhouse	Allis-Chalmers Manufacturing Co.	12-8-64 ---	368,041	291,296
97984	Turbines, Governors, Valves, etc., Moccasin Powerhouse	Hitachi-New York, Ltd.	3-11-65 ---	1,211,402	---
99783	Oil Circuit Breakers for Intake Switchyard	Westinghouse Electric Corporation	4-21-65 ---	125,300	99,652
70155	Moccasin Generators	Ferrostaal A. G.	1-24-66 ---	807,266	---
Total Amount of Hetch Hetchy Contract Construction Work Performed During Fiscal Year					<u>\$5,894,827</u>

TABLE 17
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS
FISCAL YEAR 1965-66

Contract No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
A-331	Parking Garage	Engstrum-Nourse & Massman Constr. Co.	7-8-63	2-2-66	\$7,459,000	\$ 666,633
A-339	Extension of Runway R	L. C. Smith Co.	10-18-65	4-22-66	137,731	122,106
A-345 R	Flight Announcing System Central Terminal	Communications Systems	5-24-65	8-21-65	3,150	2,650
A-348	Construction of Pier FF	ColWel Construction Co.	7-19-65	---	692,590	487,196
A-354	Alterations to Central Terminal Building	Arntz Construction Co.	8-31-64	---	1,203,000	320,824
A-355 R	Exterior Signs Parking Garage	Gerrell Enterprises, Inc.	7-5-65	11-12-65	39,884	39,969
A-364	Reconstruct Taxiways A, D, E, F and Apron Runway 10L	L. C. Smith Co.	9-6-65	12-9-65	199,765	213,354
A-366	Air Cargo Building No. 4	ColWel Construction Co.	2-1-65	9-23-65	277,927	114,774
A-367 R	Air Cargo Building No. 4 Paving	Lowrie Paving Co., Inc.	10-26-64	7-16-65	187,194	3,777
A-373 R	Blast Fence for Terminal Aprons	Gerrell Enterprises, Inc.	5-3-65	8-17-65	29,676	3,996

(Cont'd)

TABLE 17 - (Cont'd)
SAN FRANCISCO INTERNATIONAL AIRPORT

Contract No.	Description	CONSTRUCTION CONTRACTS FISCAL YEAR 1965-66				Original Contract Price	Value of Work Done During Fiscal Year
		Contractor	Contract Started	Contract Completed			
A-377	Improvement to Water and Sewage Systems	R. B. McNair Sons	5-5-65	1-21-66		\$ 55,684	\$ 43,452
A-381	Pavement Reconstruction and Runway 10R Extension	L. C. Smith Co.	5-3-66	---		505,790	399,743
A-384	Timber Trestle for Runway 28L Approach Light System	LeBoeuf Dougherty	11-29-65	5-31-66		127,500	127,710
A-386	Outbound Baggage Conveyors South Side Central Terminal	Mathews Conveyor Co.	5-24-65	---		72,066	70,624
A-393	Moving Ramps - Parking Garage	Stephens-Adamson Mfg.	1-25-65	1-21-66		356,470	180,106
A-395 R	Concrete Curbs for Parking Area	Kunz Paving Co.	1-17-66	4-5-66		17,162	17,050
A-398	12-kv Electric Service	Brayer Electric Co.	5-17-65	---		76,883	49,974
A-399 R	Oxidation Pond and Pumping Facilities	Baldwin Warren Co.	6-7-65	8-20-65		58,416	29,666
A-401	Construction and Maintenance Base - Plot 17	A. M. Hardy & Co.	3-28-66	---		87,998	82,031

(Cont'd)

TABLE 17 - (Cont'd)
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS
FISCAL YEAR 1965-66

<u>Contract No.</u>	<u>Description</u>	<u>Contractor</u>	<u>Contract Time Started</u>	<u>Contract Time Completed</u>	<u>Original Contract Price</u>	<u>Value of Work Done During Fiscal Year</u>
A-404	South Terminal Building Additional Baggage Conveyors	Mathews Conveyor Co.	10-18-65	---	\$153,197	\$145,537
A-405	Alterations to Heating System Phase I - Former Pan. Am. Base Heating, Inc.	Barnett Plumbing and Heating, Inc.	5-3-65	11-19-65	71,245	7,125
A-406	Moving Walks - Parking Garage	Westinghouse Electric Corporation	4-12-65	3-25-66	227,181	222,181
A-409 R	Signs - Central Terminal Building Unit No. 1	Nelson Neon, Inc.	5-17-65	7-12-65	7,764	764
A-412	Alterations to Heating System Phase II - Former Pan. Am. Base Heating, Inc.	Barnett Plumbing and Heating, Inc.	7-5-65	1-14-66	64,440	65,733
A-414	Condensate Pump - South Terminal Boiler Room	Currie Heating & Plumbing Co.	6-7-65	7-19-65	1,977	477
A-415	Reconstruct Sidewalks and Pavements - Terminal Area	The Fay Improvement Co.	3-28-66	4-27-66	11,419	11,316
A-416	Signs - Central Terminal Building Unit No. 2	QRS Neon Co.	10-11-65	---	28,722	30,776

(Cont'd)

TABLE 17 - (Cont'd)
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS FISCAL YEAR 1965-66						
Contract No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
A-417	Alterations to Hangar No. 4 for Temporary Firehouse	Engstrum & Nourse	9-20-65	12-29-65	\$68,350	\$69,439
A-418	Reroofing Unit No. 1 Pier C	Robt. F. Smith Co., Inc.	8-9-65	10-20-65	4,871	4,871
A-419	Room 16-2 Pier FF & Extension of Corridor 15-27 Pier G	ColWel Construction Co.	10-11-65	3-4-66	4,994	4,994
A-421	Pavement Overlay North Perimeter Road	L. C. Smith Co.	2-14-66	2-16-66	6,030	6,376
A-422	Replacement of Drainage Line at Pump Station No. 4	C. W. Greer	3-21-66	4-19-66	1,100	1,100
A-423	Service Road for Terminal Apron	L. C. Smith Co.	11-22-65	4-1-66	28,972	27,295
A-424	Silt Removal - 1965	McGuire & Hester	10-25-65	11-22-65	5,832	5,767
A-425	Drainage Pipeline South Lomita Canal	O. K. Construction, Inc.	9-27-65	10-17-65	11,325	11,703
A-427	Lighting at Road R-10 and Upper Level Road	Kennedy Electric Co.	11-8-65	2-4-66	2,253	2,253

(Cont'd)

TABLE 17 - (Cont'd)
SAN FRANCISCO INTERNATIONAL AIRPORT

<u>Contract No.</u>	<u>Description</u>	<u>CONSTRUCTION CONTRACTS</u> <u>FISCAL YEAR 1965-66</u>		<u>Contract Time Completed</u>	<u>Original Contract Price</u>	<u>Value of Work Done During Fiscal Year</u>
		<u>Contractor</u>	<u>Started</u>			
A-429	Test Fill for Extension of Runway 28R	L. C. Smith Co.	9-13-65	9-24-65	\$ 4,912	\$ 4,901
A-432 R	Pier C Signs	QRS Neon Co.	5-9-66	6-22-66	6,433	6,433
A-433 R	Waterproof & Roof Drainage Piers F & G	Wilco Construction Co.	6-27-66	---	41,943	---
A-434	Traffic Control for Taxiway F Runways 1L and 1R	Abbett Electric Corp.	2-21-66	---	9,677	4,838
A-435	Modify Electric Service Station U	Brayer Electric Co.	1-17-66	3-11-66	4,475	4,475
A-438	Approach Road Signing	QRS Neon Co.	1-17-66	4-11-66	2,922	3,214
A-443	Replacement of Sewer Line at Pump Station No. 5	Associated Pipeline, Inc.	6-27-66	---	1,750	---
A-457	Furnish & Install Traffic Posts - Parking Garage	Endurance Metal Products Co.	6-6-66	6-20-66	3,321	3,321

Total Amount of Airport Contract Construction Work Performed During Fiscal Year

\$3,620,524

TABLE 18
MUNICIPAL TRANSIT SYSTEM

CONSTRUCTION CONTRACTS
FISCAL YEAR 1965-66

Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
MR-491	Overhead Construction for Temporary Detour - 18th St.	Abbett Electric Corp.	10-25-65	---	\$41,317	\$21,365
MR-493 R	Replace Roof Gutters and Downspouts - 24th & Utah	Western Roofing Service	6-14-65	9-11-65	6,442	5,942
MR-494	Alterations to Room A 949 Presidio Avenue	Arthur W. Baum	7-12-65	9-27-65	5,200	5,200
MR-495	Roof Repairs Turk Street Substation	Western Roofing Service	7-12-65	9-24-65	2,974	2,974
MR-496	Outer Mission Substation Shelter	Nibbi Bros., Inc.	7-19-65	3-17-66	15,228	15,316
MR-497	Geary Carhouse and Office Building Reroofing	Western Roofing Service	7-26-65	10-15-65	15,238	15,238
MR-499	Paint Shop Ramp Elktion Yard	Lowrie Paving Co., Inc.	12-6-65	1-13-66	1,977	1,977
MR-500	Roof Repairs - Office Building 1345 Turk Street	New Art Roofing	5-2-66	5-18-66	2,445	2,445

(Cont'd)

TABLE 18 - (Cont'd)
MUNICIPAL TRANSIT SYSTEM

CONSTRUCTION CONTRACTS
FISCAL YEAR 1965-66

<u>Contract No.</u>	<u>Description</u>	<u>Contractor</u>	<u>Contract Time Started</u>	<u>Contract Time Completed</u>	<u>Original Contract Price</u>	<u>Value of Work Done During Fiscal Year</u>
MR-502	Roof Repair - Paint Shop at San Jose Avenue	Western Roofing Service	3-7-66	3-25-66	\$3,738	\$ 3,738
MR-504	Drainage Trough at Ocean Avenue Yard	Norman C. Hynding Co.	4-4-66	5-10-66	4,574	4,574
Total Amount of Municipal Transit System Contract Construction Work Performed During Fiscal Year						<u>\$78,769</u>

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* A P P E N D I X *
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HETCH HETCHY WATER SUPPLY, POWER AND UTILITIES ENGINEERING BUREAU
AND
BUREAU OF LIGHT, HEAT AND POWER

ORGANIZATION AND PERSONNEL

O. L. Moore

General Manager

Hetch Hetchy Project

Administration:

B. W. Grethel

Assistant General Manager

Power Production:

R. E. Collins

Senior Electrical Engineer

Water Production:

D. H. Matlock

Senior Mechanical Engineer

Land and Water Resources:

R. Bei

Senior Civil Engineer

Operations:

J. M. Woods

Superintendent of Operations

Accounting:

W. J. Dwyer

Chief Accountant

Utilities Engineering Bureau

Administration:

W. F. Getts

Principal Civil Engineer

Planning:

J. L. Bardoff

Senior Civil Engineer

Civil and Structural Engineering:

R. G. Lee

Senior Civil Engineer

Electrical Engineering (Hetch Hetchy):

S. Yakahl

Electrical Engineer

Electrical Engineering (Airport & Mun. Rwy.):

R. A. Protti

Electrical Engineer

Mechanical Engineering:

B. D. Kong

Associate Mechanical Engineer

Architectural:

S. F. Davis

Senior Architect

Construction:

P. J. Phillips

Senior Construction Engineer

Bureau of Light, Heat and Power

Street Lighting and Utility Services:

L. R. Clark

Electrical Engineer

1966

ANNUAL REPORT

1967

HETCH HETCHY WATER AND POWER UTILITIES ENGINEERING BUREAU

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CITY AND COUNTY OF SAN FRANCISCO

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION

ANNUAL REPORT
FISCAL YEAR 1966-67

HETCH HETCHY WATER SUPPLY, POWER AND UTILITIES
ENGINEERING BUREAU
AND
BUREAU OF LIGHT, HEAT AND POWER

O. L. MOORE
GENERAL MANAGER

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION

November 15, 1967



HETCH HETCHY WATER SUPPLY
POWER AND UTILITIES ENGINEERING BUREAU
425 MASON STREET
SAN FRANCISCO, CALIFORNIA 94101
TELEPHONE 558-3821

Subject: ANNUAL REPORT
FISCAL YEAR 1966-67

Mr. James K. Carr
General Manager of Public Utilities
Public Utilities Commission
City and County of San Francisco

Dear Mr. Carr:

The Annual Report of the Hetch Hetchy Water and Power, Utilities Engineering Bureau and the Bureau of Light, Heat and Power for fiscal year ending June 30, 1967 is respectfully submitted. Following are highlights of the report:

There was approximately \$21,000,000 appropriated this fiscal year and this amount was administered for the various activities of the Department which covered operation, maintenance, engineering and construction. The above amount is in addition to funds that had been previously appropriated for construction under way or completed during the year.

During the past fiscal year revenue from water and power sales amounted to \$13,787,438 compared to total operating expenditures of \$13,943,885. The last amount includes bond interest and redemption but does not include funds which were appropriated from prior year's unappropriated revenues for the third and final phase of the replacement for Moccasin Powerhouse. Power from Hetch Hetchy was furnished to various City departments for municipal purposes at cost and at rates which are 21% below those of Pacific Gas and Electric Company, resulting in a saving of \$800,273 to the taxpayers of San Francisco.

An exceptional year from a water production standpoint occurred during fiscal year 1966-67. Winter storms and late spring storms deposited a substantial snowpack on the City's portion of the Tuolumne River watershed. The resulting snowmelt runoff filled the City's three mountain reservoirs, Hetch Hetchy, Lake Lloyd and Lake Eleanor, brim-full. Runoff was 144% of normal for the year. Through a program of scheduled advance releases the City contributed immeasurably to the prevention of flooding in the San Joaquin Valley.

Fifty-two construction contracts for Hetch Hetchy Water and Power, San Francisco International Airport and San Francisco Municipal Transit System in a total bid amount of \$12.7 million were awarded during the past year. The total value of construction work performed was \$8.4 million with \$7.9 million under current contracts remaining to be completed. The preparation of plans and specifications for an additional \$4.0 million was under way at the end of the fiscal year.

On the Hetch Hetchy Project, the \$4.3 million Robert C. Kirkwood Powerhouse and the \$2.3 million connecting penstock were completed and the 67,500 KW rated powerhouse commenced operation on March 1, 1967. This essentially completed the final phase of the Canyon-Cherry Power Development financed by the \$54 million bond issue approved in 1955.

The new \$4 million replacement for the Moccasin Powerhouse was well under construction at year's end. The new powerhouse will replace Moccasin Powerhouse, the original "cash register" for the Hetch Hetchy Project, which had been completed in 1925 and was nearing the end of its useful life.

Approximately half of the final 14-mile section of the 47.5 mile San Joaquin Pipeline No. 3 was completed. When this pipeline is completed next year the delivery capacity of the Hetch Hetchy Aqueduct will be increased from the present 220 million gallons per day to approximately 300 million gallons.

Bids were received by the Turlock and Modesto Irrigation Districts in June, 1967, for the main construction contract for the \$100 million New Don Pedro Project. A favorable low bid received enabled commencement of construction in August. The City's contribution to the Project amounts to approximately \$45,000,000 from the \$115 million 1961 Water System Improvement Bonds.

Design and construction of facilities for San Francisco International Airport continued at a rapid pace to keep up with dramatic increases in passenger and air cargo traffic.

The major renovation of the Central Terminal Building was completed. Improvements were made in baggage handling facilities at both terminals. Pier FF at the South Terminal and its concourse were completed and placed in service.

On the landing field conversion work on Runway 10R-28L was completed to establish this runway as an instrument runway. Bids were received for extending the main Runway 10L-28R to a total length of 11,870 feet.

A number of other improvements at the Airport were completed or under way. These include repaving of runways and taxiways, improving the handling of industrial wastes, construction of drainage pumping plants and relocation of circulation roads.

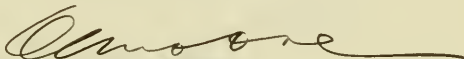
Preparations were made for submitting a \$98 million bond issue for further Airport expansion to the City's voters at the November, 1967 municipal election. Projects to be financed by the bond issue include a new North Terminal, completion of the parking garage to its ultimate 8000-car capacity, construction of interim and permanent air cargo facilities, improvements to runways and taxiways and necessary roads and utilities.

Several contracts were completed for improvements to the operating properties of the San Francisco Municipal Transit System. Relocations of overhead facilities were required in order to make way for BART construction on Market and Mission Streets.

Several buildings were painted and excellent progress was made on a general beautification program. A visitors' gallery was under construction at the Washington-Mason Cable Car barn. This will provide an observation platform for the public to view the operation of the cable car machinery. It will be decorated in a "gaslight" motif, reminiscent of the Gay 90's. Numerous meetings were held with the Market Street Task Force, BARTD, Department of Public Works, Recreation and Park Department and the Redevelopment Agency relative to Muni facilities on Market Street and adjacent to the Embarcadero Plaza.

The program for the modernization of street lighting continued. 548 new street lights were added to the City-owned underground system. The total number of street lights in service as of June 30, 1967 was 35,472 units.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'O. L. Moore', with a long, sweeping horizontal line extending to the right.

O. L. MOORE
General Manager

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Pipeline Cross-connection South of Oakdale -
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South Oxidation Pond Between Runway 1R and Millbrae Canal at
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S. F. International Airport
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Washington-Mason Cable Car barn (After)

(Continued)

T A B L E S

HETCH HETCHY WATER SUPPLY AND POWER SYSTEM

1. Comparison of Budgeted and Actual Expenditures
2. Summary of Receipts and Expenditures
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BUREAU OF LIGHT, HEAT AND POWER

8. Comparison of Budgeted and Actual Expenditures and Receipts
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16. Hetch Hetchy Water Supply and Power System
17. San Francisco International Airport
18. Municipal Transit System

A P P E N D I X

Organization and Personnel
San Francisco Water and Power Systems - General Map
San Francisco International Airport - Proposed Plan of Development

ANNUAL REPORT

I. ORGANIZATION AND FUNCTIONS

HETCH HETCHY WATER SUPPLY, POWER AND UTILITIES ENGINEERING BUREAU and BUREAU OF LIGHT, HEAT AND POWER serves the City and County of San Francisco in the dual function of an operating department and a service bureau under policies established by the San Francisco Public Utilities Commission.

Hetch Hetchy Water Supply and Power System, an operating unit, encompasses a municipally-owned system of storage reservoirs and aqueducts which collects water from the Tuolumne River watershed in California's Sierra Nevada and delivers it to the San Francisco Water Department. Approximately three-fourths of the water supplied in San Francisco and the Water Department service area comes from this source. Hetch Hetchy also operates and maintains hydroelectric generating stations and high voltage transmission lines for the production and distribution of electric energy, a by-product of its major function.

The Utilities Engineering Bureau, a service bureau, provides engineering services for Hetch Hetchy, San Francisco International Airport, and San Francisco Municipal Transit System and is responsible for design and construction of all improvements for these utilities.

The Bureau of Light, Heat and Power arranges, under contracts, for furnishing electric, gas, and steam services to municipal departments and handles the monthly billing. It also supervises planning and improvements of street lighting furnished by Pacific Gas and Electric Company and administers contracts for street lighting operation and maintenance. Financing, design, and construction of City-owned street lighting improvements are under jurisdiction of Department of Public Works. In accordance with provisions of the City and County Charter and the Administrative Code, plans for these improvements must be approved by the Public Utilities Commission through this Bureau.

For fiscal year 1966-67, the Department administered budgeted funds for operation, maintenance, engineering, and construction as follows:

<u>Budget</u>	<u>No. of Employees</u>	<u>Total Amount Appropriated</u>
Hetch Hetchy Project	119	\$14,968,563
Utilities Engineering Bureau	159	629,158
Bureau of Light, Heat and Power	12	5,364,774
1955 Hetch Hetchy Power Bond Fund	--	200,497 *
1956 Airport Bond Fund	--	55,846 *
1961 Municipal Water System Bond Fund	--	301,347 *
1962 Airport Bond Fund	--	97,674 *
		<hr/>
		\$21,617,859
Less budget transfer duplications		311,276
		<hr/>
TOTAL	290	\$21,306,583

* Does not include funds previously appropriated for construction under way or completed during fiscal year 1966-67.

II. HETCH HETCHY WATER SUPPLY AND POWER SYSTEM

Description

The primary source of water for the people of the City and County of San Francisco originates on the upper Tuolumne River watershed of the western slope of the Sierra Nevada, approximately 150 miles easterly of the San Francisco Bay Area. The City's water development is known as the Hetch Hetchy Project. Local sources of water in San Mateo, northern Santa Clara and southern Alameda Counties supplement this supply from the mountains. In addition to furnishing municipal and industrial water to the City's inhabitants Hetch Hetchy also provides for the needs of a number of communities in San Mateo, Santa Clara and Alameda Counties which comprise San Francisco's service area.

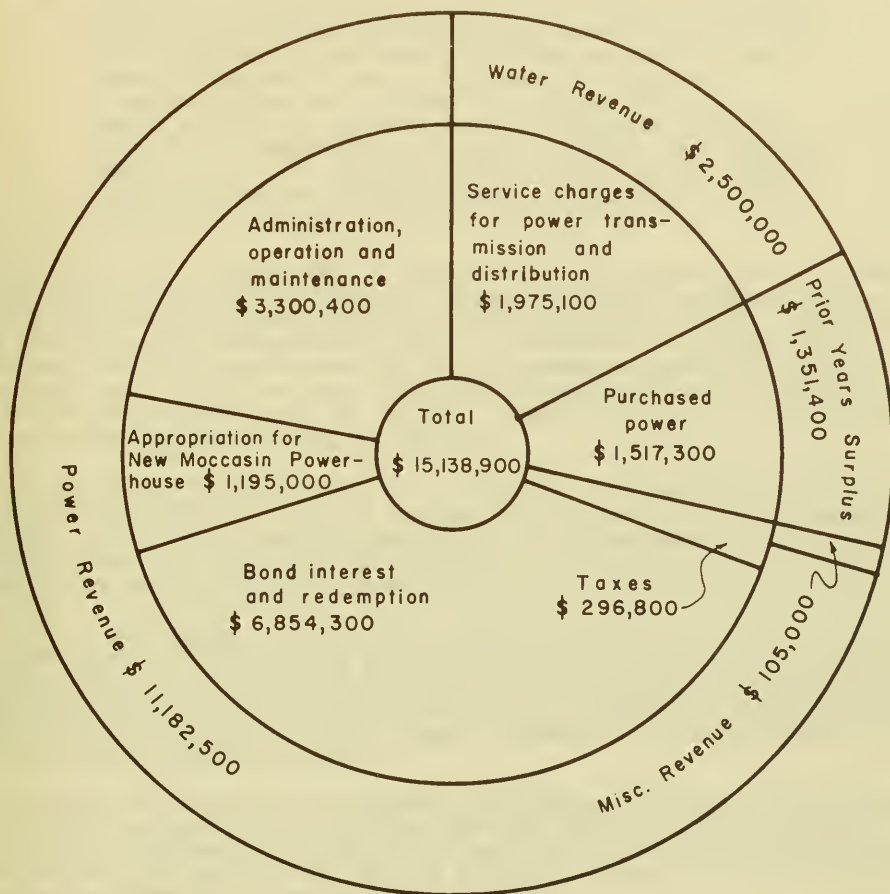
As a by-product of the water supply function, electrical energy is generated at City powerhouses on the Hetch Hetchy Project. The power is conveyed to San Francisco over transmission lines of the City and those of the Pacific Gas and Electric Company under a wheeling agreement. This electrical energy is utilized to meet the requirements of the municipal transit system, international airport, water supply pumping stations, street lighting, public buildings and other municipal needs. Electrical energy surplus to municipal needs is sold to the Turlock and Modesto Irrigation Districts in the San Joaquin Valley to supplement generation in their own plants and, through facilities of the Pacific Gas and Electric Company, to seven industrial customers. Load requirements in excess of the City's Hetch Hetchy generation are supplied by power and energy purchased from the Pacific Gas and Electric Company.

The Hetch Hetchy Project is self-sustained by revenue from sales of electric power and the wholesale delivery of water to the San Francisco Water Department. The Water Department stores and distributes water to customers in the City and wholesales water to communities in its service area. Power revenues of Hetch Hetchy are applied to reduce the cost of delivered water.

Operating properties of Hetch Hetchy are located in Tuolumne, Stanislaus, San Joaquin, and Alameda Counties. Water supply facilities include: eight dams with appurtenant impounding and regulating reservoirs and diversion works; 67 miles of tunnels; and 106 miles of aqueduct pipelines. Power system facilities include: four powerhouses; Moccasin-70,000 kilowatts, Dion R. Holm-135,000 kilowatts, Robert C. Kirkwood-67,500 kilowatts, and Intake-3,600 kilowatts (standby); 190 miles of high voltage transmission lines; substations and switchyards. These facilities also include electric distribution, telephone and radio communication systems for project use.

The power system was expanded by completion this fiscal year of the second stage of the Canyon-Cherry Power Development financed from the \$54 million, 1955 Hetch Hetchy Power Bonds. The first stage, completed and placed in service in August, 1960, included Cherry Power Tunnel and Dion R. Holm Powerhouse, Intake Switchyard, Warnerville Substation, and the associated transmission system. The second stage, completed and placed in service in March, 1967, includes Canyon Power Tunnel, Robert C. Kirkwood Powerhouse and appurtenant facilities.

A map showing Hetch Hetchy water supply and power system, together with San Francisco Water Department system, is included in the Appendix.



**HETCH HETCHY REVENUES AND EXPENDITURES
FISCAL YEAR 1966-67**

Revenue and Expenditures

Revenue from Hetch Hetchy Project operation is derived principally from two sources:

1. Wholesale delivery of water to San Francisco Water Department.
2. Sale of electric power and energy to San Francisco municipal departments, Modesto and Turlock Irrigation Districts in the San Joaquin Valley, and seven industrial customers -- Kaiser Cement and Gypsum Corporation's cement plant and Kaiser Aluminum and Chemical Corporation's aluminum foil plant, in Santa Clara County; chemical plants of Dow Chemical Company, Hercules, and Shell Chemical Company in Contra Costa County; chemical plant of California Ammonia Company in San Joaquin County; and the Army Ammunition Plant at Riverbank in Stanislaus County, operated by Norris Industries.

Revenue from sale of water and for standby service to the San Francisco Water Department was \$2,500,000. This was substantially less than previous years due to the Water Department's need for capital improvement funds. Gross sales of electric energy amounted to \$11,182,682, compared to \$11,314,664 during the year 1965-66. This decrease in electric revenue reflected the decrease in actual sales during the year, 1,560,580,020 kilowatt-hours as compared to 1,596,057,441 kilowatt-hours for 1965-66. Revenue for service orders, rentals, meals, and miscellaneous items was \$104,970.

Power and energy delivered to all City Departments increased by 6.5 percent this year with a specific 13.5 percent increase for the San Francisco International Airport. Hetch Hetchy power is furnished to City Departments at cost, representing a saving to taxpayers for 1966-67 of \$800,273, compared to the cost if supplied by the local investor-owned utility.

Because of installation of gas turbines capable of producing 48,000 kilowatts of in-plant power at the beginning of the fiscal year, purchase of power by the Dow Chemical Company for use at its Pittsburg plant during 1966-67 was reduced by approximately 70 percent. However, most of this reduction was made up by the increase in consumption of City's present customers and other customer loads which were added during the year.

During the year, \$1,505,717 was expended for purchase of electric power and energy for resale, compared to \$1,457,210 for 1965-66. The increase resulted from unfavorable water conditions during the winter of 1965-66, which required curtailment of off-peak generation at the Dion R. Holm Powerhouse in order to obtain maximum benefit to City from the water available.

Service charges for transmission and distribution of Hetch Hetchy power over facilities of Pacific Gas and Electric Company were under the appropriation of \$205,101 because of the reduced expenditure required for transportation charges to serve industrial customers. The scheduled assignment of Shell Chemical Company and the California Ammonia Company to City by the Pacific Gas and Electric Company was delayed from the fall of 1966 until commencement of commercial operation of the new Robert C. Kirkwood Powerhouse on March 1, 1967, the completion date for the Powerhouse.

Interest and redemption costs for the year on outstanding Hetch Hetchy bonds totaled \$6,854,301.

Tables 1, 2 and 6 show comparative data on receipts, expenditures and sales of water and power from operation of Hetch Hetchy water supply and power system.

Taxes

Taxes for 1966-67 on utility properties under jurisdiction of Hetch Hetchy, located outside the City and County of San Francisco, were paid in the following amounts;

<u>Tax-Levying Body</u>	<u>Assessed Value</u>	<u>Total Amount of Taxes Paid</u>
Alameda County	\$ 1,550	\$ 149.34
San Joaquin County	27,770	2,223.34
San Mateo County	2,335	190.52
Stanislaus County	65,370	5,565.30
Tuolumne County	3,701,020 (a)	287,594.96
Banta-Carbona Irrigation District	3,192	127.68
Oakdale Irrigation District	12,320	862.40
West Stanislaus Irrigation District	1,800	90.00
TOTAL	\$3,815,357	\$296,803.54

(a) Includes \$3,000,000 assessment for water rights.

Water Production and Transmission

From a water production standpoint the winter of 1966-67 was an exceptional one. Early winter storms deposited a substantial snowpack on the Sierras. There followed a series of storms at various intervals during the winter, continuing on into April and May. The resulting precipitation amounted to 145% of normal, a record year throughout the Sierras.

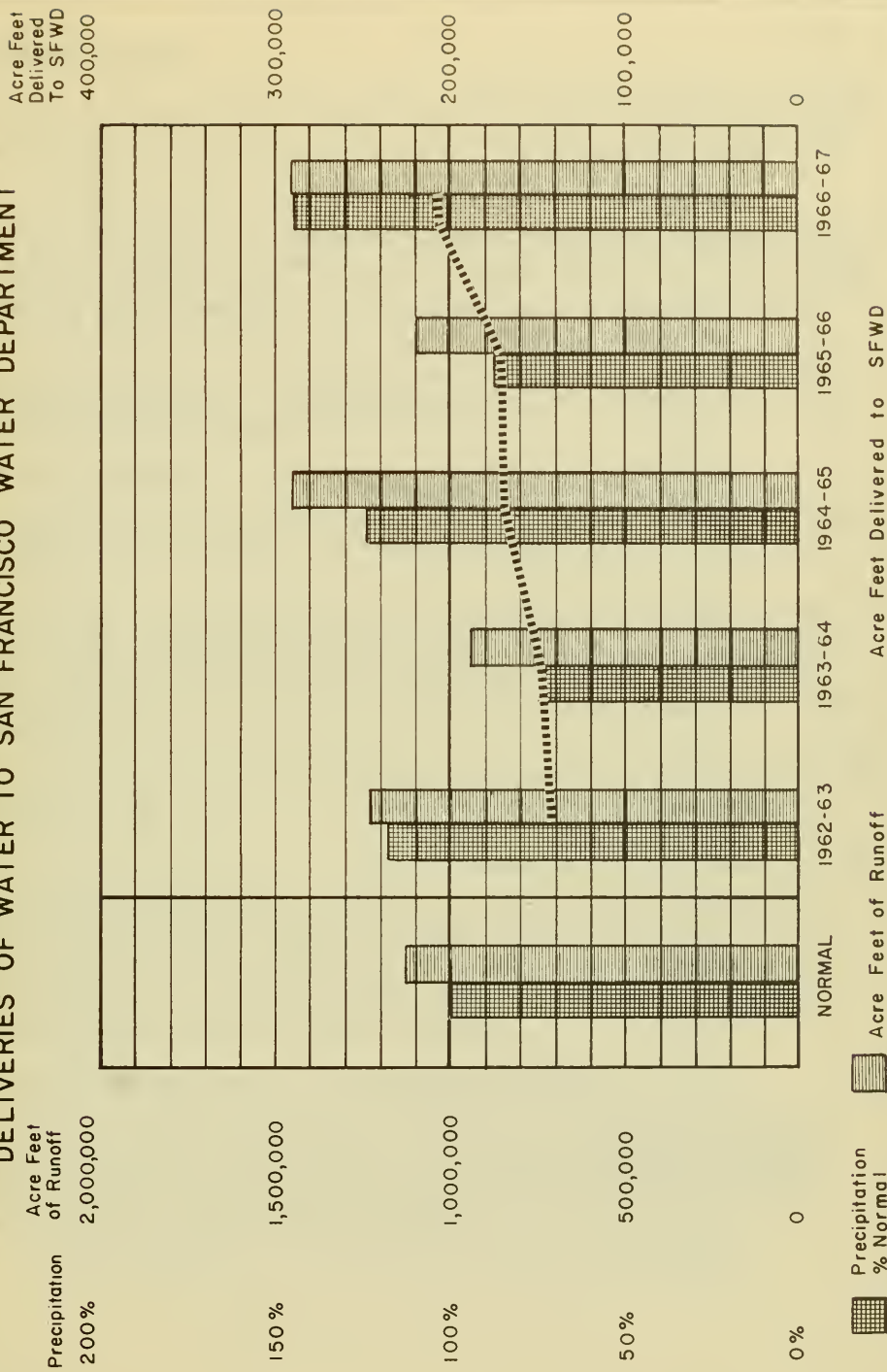
During the late spring and early summer low temperatures in the mountains provided an extremely beneficial situation since melting occurred at a more gradual rate than usual and it was possible to bypass the record runoff effectively, without flooding the lowlands of the San Joaquin Valley.

On August 1, 1967 the three mountain reservoirs, Hetch Hetchy, Lake Lloyd and Lake Eleanor, were all full and spilling; later in the year than at any other time in the history of the Hetch Hetchy Project.

During the year, 67,874,300,000 gallons of water were diverted from the Tuolumne River watershed through the Hetch Hetchy Aqueduct for delivery to the San Francisco Water Department, representing 86.3 percent of the City's total customer consumption. In addition, 193,584,000 gallons were delivered to the United States Atomic Energy Commission at Mocho Shaft of the City's Coast Range Tunnel for use at the Lawrence Radiation Laboratory at Livermore; 10,300,000 gallons were delivered to the Groveland Community Services District in Tuolumne County.

Table 3 shows comparative data on precipitation, runoff, storage and delivery of the Hetch Hetchy Water Supply system.

RUNOFF FROM SAN FRANCISCO'S TUOLUMNE RIVER WATERSHED AND DELIVERIES OF WATER TO SAN FRANCISCO WATER DEPARTMENT



Power System Operation

In order to utilize as much of this year's record runoff as possible for revenue production, generation at both Dion R. Holm and Robert C. Kirkwood Powerhouses was increased to the maximum available during the months of April through June.

Robert C. Kirkwood Powerhouse

On March 1, 1967 Robert C. Kirkwood Powerhouse was placed in commercial operation. This addition increases the name plate-rated system capacity by 67,500 kilowatts to a total of 272,500 kilowatts, exclusive of 3,600 kilowatts of capacity of the semi-retired Early Intake plant. Actual system capacity, including reserve, is in excess of 300,000 kilowatts.

Completion of the Robert C. Kirkwood Powerhouse culminates a ten-year program of power generation expansion on the Hetch Hetchy Project, initiated by the 1955 Power Bond Issue in the amount of \$54 million.

New Electric Customers

The Army Ordnance Plant located in the vicinity of the town of Riverbank, Stanislaus County, was reactivated in August, 1966 and again became a customer of Hetch Hetchy.

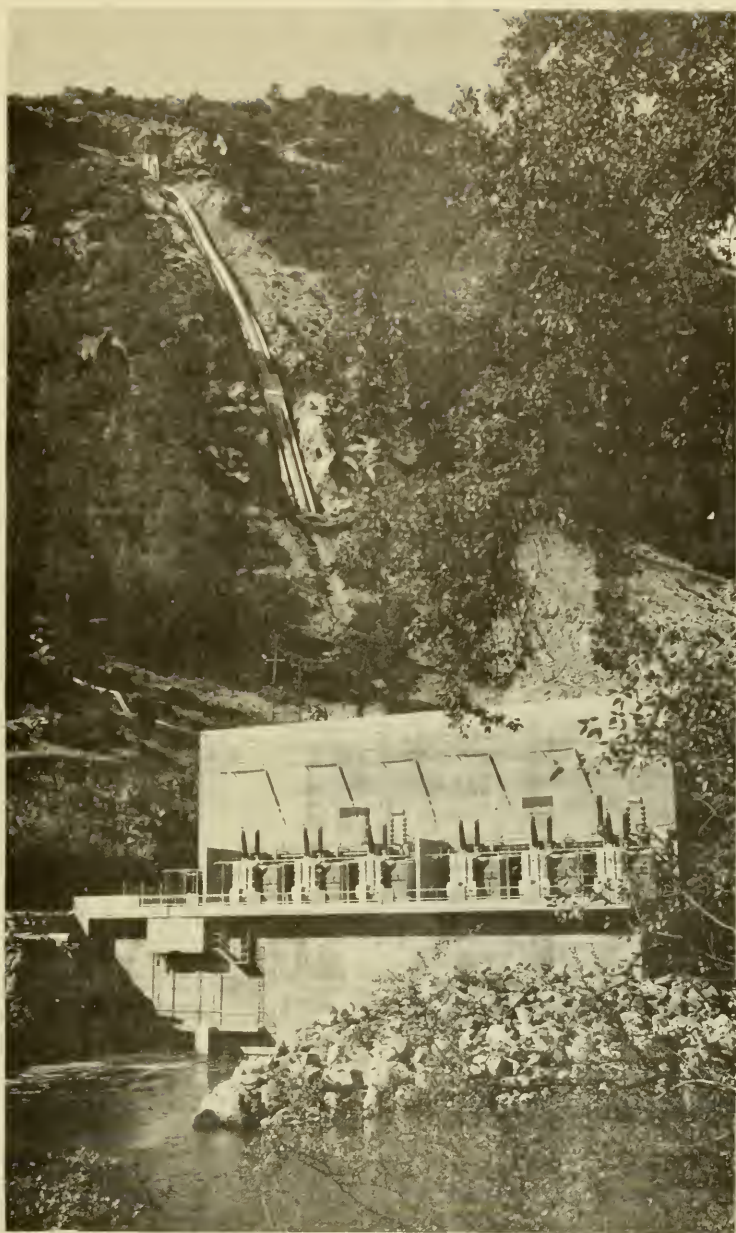
This plant was built during World War II and operated briefly as an aluminum reduction plant. During the Korean War it was converted to the production of steel cartridge cases and was operated by the Norris-Thermador Corporation as contractor until the plant was shut down in 1958. During each period of operation electric power was supplied by the City from the adjacent Hetch Hetchy transmission line.

Norris Industries (formerly Norris-Thermador Corporation) is again operating this Army facility under contract for the production of mortar shell casings and projectiles.

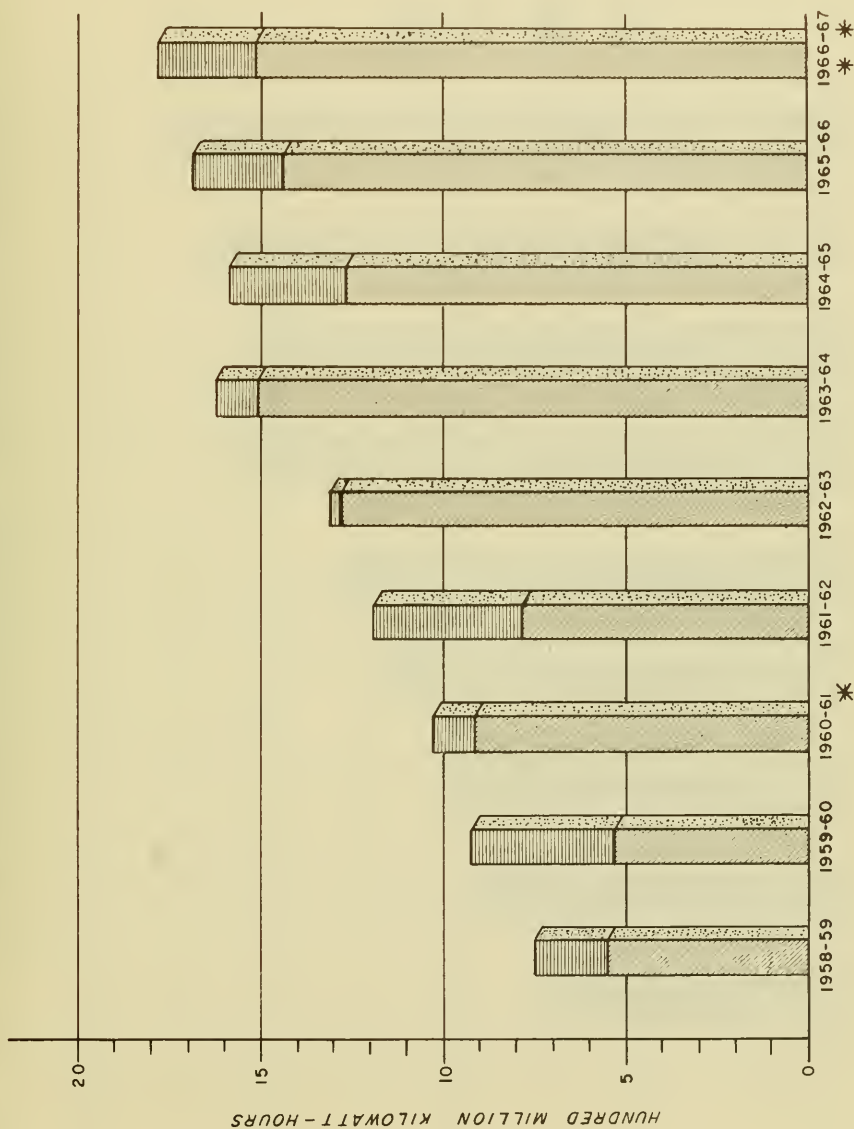
With the completion of Robert C. Kirkwood Powerhouse it became necessary for the City to assume additional load to utilize the increased generating capacity. In accordance with our agreement of August 1, 1960 with the Pacific Gas and Electric Company, the Shell Chemical Company of Pittsburg, California, was reassigned to Hetch Hetchy effective March 1, 1967. Also in accordance with a previous commitment, the Pacific Gas and Electric Company assigned to Hetch Hetchy effective May 1, 1967, its electric power service contract with the California Ammonia Company of Lathrop, California.

Increased Transformer Capacity at Warnerville Substation

The capacity of the two autotransformers supplying the Warnerville-Station J transmission system was each increased from 75 mva to 93.5 mva by installing additional forced air cooling equipment. The increased rating will enable them to carry the Irrigation Districts' load until 1968, when a third autotransformer, now on order, will be installed.

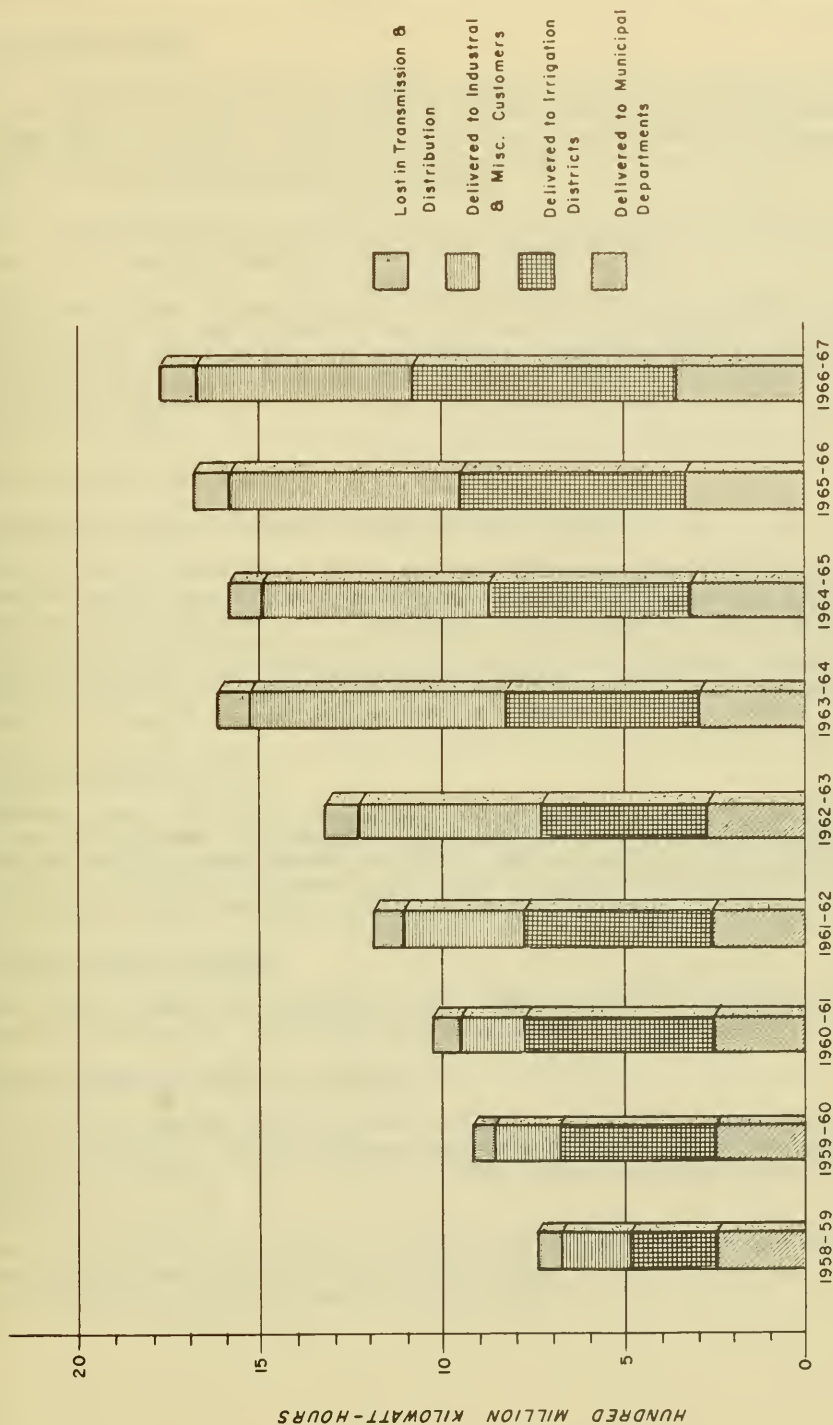


Newly-completed Robert C. Kirkwood
Powerhouse and connecting penstock



HETCH HETCHY ELECTRIC ENERGY — GENERATED AND PURCHASED

DISTRIBUTION OF HETCH HETCHY ELECTRIC ENERGY



Transmission Study

R. W. Beck and Associates were employed under a professional services contract to investigate the feasibility of the City of San Francisco constructing electric transmission facilities to deliver Hetch Hetchy Project power to City municipal loads as an alternative to delivery of power under the present wheeling contract with the Pacific Gas and Electric Company.

They investigated three basic plans, all of which appeared to be economically and financially feasible, based on the existing wheeling rates.

Under Plan I, the City would deliver directly only to the San Francisco International Airport. Under Plan II, the City would deliver directly to the Airport and would deliver to Pacific Gas and Electric Company the requirements of the remaining municipal loads at the City boundary. Under Plan III, the City would deliver the requirements of all major City municipal loads directly to their point of delivery.

The three plans are currently being evaluated.

Engineering Study of Additions to Hetch Hetchy Project

Clair A. Hill & Associates - R. W. Beck and Associates were employed as a joint venture to participate in an engineering study of various possible additions to the Hetch Hetchy Project. The study will cover the engineering and economic feasibility of hydroelectric installations that are or may be available and their relationship to present and future markets for Hetch Hetchy power. Power marketing is the subject of another study currently under way and this study will augment the information derived thereby.

Spillway Deflector Walls

Deflector walls in the spillway channel of O'Shaughnessy Dam were constructed to divert the spillway flow away from the access shaft of the diversion tunnel below the dam, and a concrete housing was built over the access shaft to provide protection for the 9-foot diameter conduit and appurtenant facilities of the Canyon Power Tunnel, which are located in the diversion tunnel.

Foothill Tunnel Flushing

The Foothill Tunnel was flushed and the section between Rock River and Oakdale Portal was inspected. The Tunnel was found to be in good condition.

State Freeway and Aqueduct Crossings

The three San Joaquin pipelines were encased in concrete at their crossings of future Interstate 5 and 580 freeways southerly of Tracy, and at an adjoining county road crossing. All costs were reimbursed by the State Division of Highways.

The State constructed maintenance bridges for the relocated and elevated San Joaquin pipelines at the point of their crossing of the 146-foot wide canal of the State's California Aqueduct south of Tracy.

South Fork Crossing

Various methods of protecting or relocating the vulnerable elevated section of the Hetch Hetchy Aqueduct at its crossing of the south fork of the Tuolumne River are being studied.

Moccasin Powerhouse

The new Moccasin Powerhouse was beginning to take shape at the end of the year. The new plant will replace the present powerhouse which has been in continuous service since 1925 and is nearing the end of its useful life. Two 45,000 kilowatt generators will be installed in the outdoor-type structure, which will be dominated by a 125-ton gantry crane.

Moccasin Warehouse

The new two-story Moccasin Warehouse was completed. The 40' by 100' facility was required to replace storage and operating facilities which were located on the site of the new powerhouse.

San Joaquin Pipeline No. 3

The final link of the 47-1/2 mile San Joaquin Pipeline No. 3 across the San Joaquin Valley was about half completed at year's end. This is the 14-1/4 mile section of 78-inch pipeline between Oakdale Portal of the Foothill Tunnel and the meter house about two miles south of the City of Oakdale.

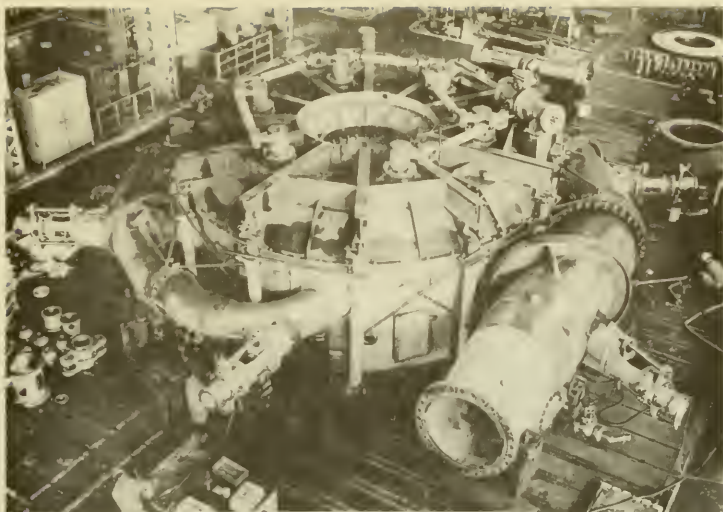
Under a separate contract, the 10-foot diameter manifold at the Oakdale Portal of the Foothill Tunnel is being extended, a valve house is being constructed, and appurtenant valves and equipment are being installed. A fourth outlet is also to be installed to provide for connection to the future No. 4 pipeline.

The final contract to complete the construction of Pipeline No. 3 was being advertised at the end of the year. This is for the raising of the existing overflow shaft at Tesla Portal by about 30 feet, and the reinforcing of approximately 260 feet of the Coast Range Tunnel adjacent to Tesla Portal with steel tunnel liner, to resist the higher operating pressures at this location when the completed pipeline is placed in service. Also under this contract, chlorinating facilities are to be expanded and modernized, a new water supply is to be constructed, and a standby emergency power supply installed.

Upon completion of all the described work, the capacity of the Hetch Hetchy Aqueduct across the San Joaquin Valley will be increased from 220 million gallons per day to about 300 million gallons per day.

Status of Hetch Hetchy Construction Contracts

A summary of Hetch Hetchy construction contracts in progress during fiscal year 1966-67 is shown in Table 16.



Shop assembly in Japan of new turbine
for New Moccasin Powerhouse



Pipeline cross-connection south of Oakdale
Beginning of Section A, San Joaquin Pipeline No. 3



Installation of 80-foot section of 78-inch
pipe in Section A, San Joaquin Pipeline No. 3



Relocation of San Joaquin Pipelines to
elevated crossing over California Aqueduct

New Don Pedro Project

A significant milestone in the history of San Francisco's water supply was reached on June 22, 1967 when bids were received by the Modesto and Turlock Irrigation Districts for the main construction contract of the New Don Pedro Project. The low bid, submitted by the Guy F. Atkinson Company of South San Francisco, was in the amount of \$49,693,960. The engineer's estimate was \$53,352,007. The bid was well within the fiscal limits set in the Fourth Agreement between the City and the Districts which had been executed the previous year. This insured commencement of construction of this \$100 million project to be constructed by the Districts and the City.

The New Don Pedro Dam and Reservoir are located on the Tuolumne River approximately 35 miles east of Modesto where the Tuolumne River emerges from the Sierra foothills.

The reservoir will have a storage capacity of 2,030,000 acre-feet and will be backed up behind an earth-rock dam approximately 580 feet high to be constructed approximately one and one-half miles downstream from the Districts' existing Don Pedro Dam, which will be inundated.

The reservoir will provide the additional storage capacity, on an exchange basis, to enable the City to meet its water requirements and those of its service area into the next century. The Districts will gain additional storage to firm up their irrigation requirements and power needs. The United States Army Corps of Engineers by contributing \$5,464,000 to the cost of the Project will acquire the necessary flood control on the Tuolumne River to handle anticipated future flood flows. The State of California will also contribute to the cost for the recreational benefits to be provided by the Project. The State Legislature has authorized an amount up to \$8,750,000 for State participation.

III. AIRPORT ENGINEERING AND CONSTRUCTION

General

Improvements at San Francisco International Airport, to accommodate the ever-increasing passenger and freight traffic, continued during the past fiscal year. The major interior renovation of the Central Terminal Building was completed. Baggage conveyor systems in the Central and South Terminal Buildings were improved and new systems were added. The five gaterooms of Pier FF were completed and placed in service. Piers C and D were remodeled. Most of the construction, demolition, and relocation required for the conversion of Runway 10R-28L to Category II operation was completed. Ground was broken for the City's fifth air cargo building. Two new pumping stations and another primary industrial waste treatment facility were constructed and placed into operation. These and other facilities were planned, designed, and constructed with funds from Airport operating revenues, the \$9.8 million 1962 Airport Bond Issue, and the \$25 million 1956 Airport Bond Issue.

A general plan of San Francisco International Airport is included in the appendix.

Construction Progress

New or improved facilities in the Central Terminal Building included the first floor ticket lobby, a waiting room on the second floor, an additional elevator, and more baggage conveying facilities. Improvements under other contracts included the installation of four new outbound conveyor systems from the ticket counters of four airlines to the ground floor baggage make-up area, and the installation of directional signs, ticket counter fascia signs, and concessionaire signs on the ground, first and second floors.

Activity in the South Terminal Building was focused on the baggage facilities. Completed were two inbound baggage carousels and feeder conveyor systems, alterations to an outbound system, the provision of separate feeder conveyors to three existing carousels, and an outbound sorting unit serving Pier F. Supplemental work included construction of a shelter for the new baggage loading area, weather enclosures over conveyors, finishing Room G-40 for baggage holding, construction of curbs and guard rails, cutting of floor access openings, water-proofing of conveyor tunnels, and relocation of pipes and conduits from a conveyor route.

Pier FF and its concourse were completed and placed in service. The facility provides gateroom areas on the upper level for five aircraft loading positions, served by "jetway" type passenger loading bridges, and 11,000 square feet on the lower level for airline operations and office facilities. Under a later contract, an additional room in the lower level was enclosed and finished. Improvements were made to the plumbing system of Pier F.

The remaining partially finished public areas at Piers C and D were upgraded during the year, thus placing them on a par with the decor of the newer passenger concourses. The improvements included acoustical ceilings, heating, ventilating, lighting, floor covering, painting, roofing, and alterations to rest rooms. Multi-lingual directional signs were installed at Pier D.

The blast fences on the terminal building aprons were painted a light blue for better appearance. This color was also used for the metal canopy over the baggage area under the concourse between Piers D and E.

A situation which had been causing operation problems at the parking garage was corrected by the installation of a traffic control gate, together with related controls, treadle, and traffic island, at each of 10 entrance lanes.

To prevent wind-blown rainwater leakage through the pervious concrete floor of the third level of the parking garage, which had been interfering with operations of second level offices, a waterproof membrane was installed on a portion of the third floor. Enclosure of the valet parking lot was completed with the installation of a security fence and wood curbs.

Bids on several miscellaneous contracts were received towards the end of the year, but work had not yet started pending award and certification. In the Central Terminal, the work includes partitioning of Room 404, installation of a new stair from the south concourse to the southeast court, relocation of the valet parking cashier's booth. To facilitate maintenance and improve performance of mechanical equipment in the South Terminal, several improvements were scheduled, including additional water supplies to Piers F and G.

In the first phase of a program designed to eliminate jet and automobile exhaust fumes from the South Terminal, bids were received for the installation of air curtain fans over various exterior floor and wall openings on the field side. A ticket dispenser and related equipment is to be installed at the entrance to Parking Lot No. 1, to enable cars to go in through the unattended entrance and go out through the garage exits.

On the landing field, the major efforts required to convert Runway 10R-28L to Category II status were completed. Category II is operation of an instrument runway down to 100-foot cloud ceiling and 1/4 mile visibility, the lowest minimums presently permitted by the Federal Aviation Administration. Under the conversion program, the runway was extended to a length of 10,600 feet, runway pavement was reconstructed, a timber trestle for the approach light system was built in Bay waters, fill was placed to accommodate the FAA's wave-guide localizer, and obstructions in the clear zone of the extended runway were demolished, removed, and relocated as necessary. Among the demolished buildings were the Executive Aircraft Terminal, Firehouse, Maintenance Building, and various hangars.

At the end of the year, work under contract and remaining to be completed included the installation of centerline lighting and touchdown zone lighting on Runway 28L, lighting on high speed exit Taxiway J leading from Runway 28L, and grading for the FAA's glide slope facility. This work will be supplemented by the FAA's final placement and testing of the electronic landing aids.

The runway extension has required the relocation of the general aviation activities. To make room for a new general aviation parking apron, Taxiway R is being moved northerly.

Deteriorated bituminous pavement was excavated from the center 40 feet of Taxiway E and is being replaced with heavy-duty concrete pavement. The outer edges are to be conformed with bituminous surfacing.

Two remote-controlled signals were installed along Taxiway F at the intersection of Runway 1L, and their control console was installed in the tower, to improve the safety of aircraft movement on the ground.

All gas service and appliances in the field lighting building were being replaced with electric service, equipment, and appliances.

Near the close of the year, bids were received for the placement of over 2 million tons of fill in San Francisco Bay to provide a foundation for the extension of Runway 28R 2,170 feet easterly, to a total paved length of 11,870 feet.

Air cargo improvements showed progress towards the end of the year. Ground was broken for the interim cargo facility, Air Cargo Building No. 5, located on Plot 6A and a portion of Plot 9. The structure will measure 100 feet by 600 feet, and will accommodate four air freighters. About 40 trucks will be able to load or unload simultaneously at the truck dock. Apron pavement, the truck court, and exterior utilities for the building were proceeding under two other contracts.

A partition was installed across Air Cargo Building No. 3 so that it could be occupied by two air freight operations, replacing an operation that moved to other quarters. New interior partitions and exterior doors were installed in the existing cargo building on Plot 6A.

At Substation I, existing 480-volt transformers, circuit breakers, and panel-board were replaced with larger units to accommodate the increased loads imposed by the bulk fuel storage facilities. At the field lighting building, a new battery bank and silicon rectifier charger were installed for emergency service. A silicon rectifier charger was also installed for the standby batteries in the emergency generator room of the Central Terminal Building.

Drainage Pumping Station No. 3 was constructed at the junction of the South Lomita and Millbrae high level canals. The open air station is designed to handle a maximum of 180 cubic feet per second of drainage waters originating west of the Bayshore Freeway. Water will be pumped from the South Lomita Canal into the Millbrae Canal, then discharged into the Bay by gravity.

Drainage Pumping Station No. 5 was constructed near the United States Coast Guard Station to intercept industrial waste waters and pump them to an existing canal for delivery to the North Oxidation Pond for treatment. This will prevent untreated dry weather waste water being discharged directly into the Bay. The South Oxidation Pond was established between Runway 1R and the Millbrae Canal. Acting as a primary industrial waste treatment plant, the two-acre pond will detain waste waters being discharged by Drainage Pumping Station No. 1 up to a maximum period of 20 days. During this time, organic chemicals will be oxidized, and oils and grease will float to the surface and be skimmed.

At the sewage treatment plant, a deteriorated section of outfall pipe was replaced with larger pipe, and other remedial measures were taken to correct backflow in the discharge system. Explosion damage in the pump room of Sewage Pumping Station No. 2 was repaired, and modifications were made to the station.



South Oxidation Pond between Runway 1R
and Millbrae Canal at S. F. International Airport



Air Cargo Building No. 5 under construction
at S. F. International Airport

A portion of Road R-2 was re-routed around a new airline facility. A part of Road R-3 was being relocated northerly, so that it will be immediately adjacent to Plot 6. This relocation will provide direct access to Road R-3 from facilities on both sides of the road.

Status of Airport Construction Contracts

A summary of the Airport construction contracts in progress during the fiscal year 1966-67 is shown in Table 17.

Planning For Future Development

Engineering work required for Federal-Aid Airport Program Project No. 9-04-034-C724 was completed and a project application in the estimated total amount of \$3,150,000 was submitted to the Federal Aviation Administration. The FAA had earlier tentatively allocated approximately \$1,294,000 towards the cost of the project. The improvements contemplated are the extension of Taxiway G, reconstruction of Taxiway F pavement, extension of the terminal apron, relocation of Taxiway B, and lighting for Taxiways D, E, and F. Application for Federal aid involved the preparation of plans, specifications, cost estimates, and an engineer's report.

A request for Federal aid was also submitted for fiscal year 1967-68, covering leveling and reconstruction of Runways 28R and 1R, widening of Taxiway S, extension and reconstruction of the terminal apron, additional runway-taxiway fillets, and taxiway centerline lighting.

Plans and specifications for the interim heliport, north of the Ferry Building in San Francisco, were completed. At year's end, commencement of this project awaited signing of lease agreements with the Port Authority for the heliport site, and with the Redevelopment Agency for parking lot sites for displaced tenants. Work will include reconstruction of the wharf area, construction of a passenger terminal building, and development of parking lots.

Drawings and specifications were also completed for directional signs in the public areas of Piers F and G, and for installation of a load rheostat for the 1000-kilowatt generator in the field lighting building.

Plans and specifications were close to completion at the close of the fiscal year for the following:

Central Terminal Building. Alterations to the communications center and additions to the automatic flight announcement selectors.

South Terminal Building. Alterations to baggage conveyor systems 6 and 7; general alterations to remedy known trouble areas and improve the reliability and capacity of the other baggage conveyor systems; establishment of a nursery; alterations to underground pipes; and additions to directional signs.

Piers. Installation of flooring and ceiling for Pier G, and directional signs for Pier E and the south concourse.



Runways and taxiways at
S. F. International Airport

Parking Garage. Modifications to main entrances; general improvements including the installation of accent lights in the planting areas; and installation of additional signs and perimeter curb.

Landing Field. Aircraft parking and servicing apron for general aviation use, and relocation of a portion of Taxiway S to provide room for the expansion of Cargo Building No. 4.

Other improvements, either under study or in preliminary stage of design, include: baggage conveyors between the parking garage and the terminal buildings; alterations to the baggage claims area, establishment of a lost and found facility, new windows on the fourth floor, and floor covering, all in the Central Terminal Building; installation of utilities for Plots 12 and 12A; reconstruction of the field drainage system; protection of water mains against electrolytic corrosion; South Terminal boiler plant alterations; and further expansion of electric facilities.

Miscellaneous Engineering

Engineering work for the Airport included a broad spectrum of activities, which had as their common goal the welfare and expansion of the Airport and the proper discharge of its community obligations.

Sampling and testing of tenants' industrial waste discharges were made throughout the year, and quarterly reports were submitted to the Regional Water Quality Control Board. Field tests and analyses of effluents from both the north and south oxidation ponds showed their performance to be satisfactory, and an evaluation report was submitted to the Regional Water Quality Control Board. Effluents entering the Bay were monitored monthly.

Assistance was given to consultants in the preparation of design standards and regulations governing tenants' waste discharges and facilities at the Airport, which became effective March 1, 1967. In compliance with Regional Water Quality Control Board directives, a monitoring program related to the enforcement of these regulations was initiated.

Discussions continued on the Airport's proposal to use the existing sewage treatment plant of South San Francisco and San Bruno on a joint venture basis, and at year's end the outlook was favorable.

Discussions also proceeded with San Mateo County and San Bruno regarding formation of the joint flood control district, consisting of the north part of the Airport and San Bruno.

Technical assistance was given to many Airport tenants in developing plans for improvements. Tenant plans for \$10,200,000 worth of new construction were checked; construction in progress was inspected for compliance with approved plans and specifications, and for conformance to applicable codes and standards. In view of the continuing large volume of new construction, much effort went into the preparation of uniform design standards and regulations governing tenant construction and improvements at the Airport.

Lease drawings for Airport tenants were prepared as required.

Data was collected and a report prepared showing the distribution of taxiway usage.

Technical assistance was furnished consultants in compiling data and in making field tests and measurements of noise and vibration in Bayside Manor, a residential subdivision in the vicinity of the Airport, in connection with jet noise litigation.

Staff members of the Department attended briefings at Los Angeles, Burbank and Seattle on the supersonic transports and "stretched" versions of present jets. The compatibility of proposed new aircraft with Airport facilities continued to be evaluated. Various seminars and conferences related to air transportation were attended during the year.

Meetings were held with representatives of the State Division of Highways, San Mateo County and neighboring cities concerning future road development, and possible freeway relocation to consolidate Airport lands. Meetings were held with representatives of the West Bay Rapid Transit Authority to discuss the problems involved in providing rapid transit service to the Airport. A meeting was also held with representatives of Westinghouse Electric Corporation to discuss the installation of "Sky-Bus" service from areas west of the freeway to the passenger terminal area.

Taxes

The following tabulation shows taxable land area, assessed valuation, and taxes paid for the San Francisco International Airport property in San Mateo County for the fiscal year 1966-67 as compared with the two previous years:

	<u>1964-65</u>	<u>1965-66</u>	<u>1966-67</u>
Total Taxable Area (acres)	4,945.81	4,945.81	4,945.81
Total Assessed Value	\$3,373,495	\$3,373,790	\$3,871,270
Total Amount Taxes Paid	\$ 278,032	\$ 238,074	\$ 294,453

The above tabulation includes taxes imposed by San Mateo County and the Cities of South San Francisco, San Bruno, San Mateo, Burlingame, and Millbrae.

IV. MUNICIPAL TRANSIT SYSTEM ENGINEERING AND CONSTRUCTION

General

Several contracts were completed during the year. A trolley coach detour was installed at 18th and Mariposa Streets to permit construction of the South Embarcadero Freeway. A drift curve was constructed for cable cars at Washington and Mason Streets, with City-fabricated materials. Trolley poles were relocated to accommodate the widening of Clay Street, between Battery and Davis Streets.

About three-fourths complete at year's end was the relocation of trolley facilities from Mission Street to South Van Ness, and from 16th to 17th Street, necessitated by pending construction of Bay Area Rapid Transit stations in the area. All costs are being borne by BART.

Contracts for the removal of steel and concrete poles at various locations, and for fencing and roofing of the vent shaft of the Twin Peaks Tunnel, were being advertised.

Buildings

Visitors' facilities at the Washington-Mason Cable Car barn were well under way at year's end. This project will provide an observation platform at mezzanine level for the visiting public to view operations of the cable car machinery.

The spacious platform will be decorated with photographs and actual models of historical transit vehicles and equipment, all in a "gas light" motif. Brilliant floodlights will invite photographers to shoot the maze of wheels and cables which pull the cable cars up San Francisco's hills.

An exhaust system was installed at the 24th and Utah shop. The Cable Car barn was re-roofed. The Geary-Presidio building was painted, and the Turk and Fillmore Substation was sandblasted to reveal the original brick, waterproofed, and trim was painted.

Painting of the following buildings had been started by the end of the year: Forest Hill Station, 24th and Utah Garage, Potrero Carhouse, Bryant Substation, Stevenson Street Substation, and Kirkland Bus Yard. Sandblasting, waterproofing and trim painting of the Cable Car barn had begun. Also under way were roof repair of the Ocean Avenue bus yard service building, concrete floor topping of the car barn's cable machinery plant, and protective screens for windows of the Turk Street Substation.

Bids were received for relighting of the Geneva car barn. Plans and specifications were completed for acoustical treatment of the gilley room in the Kirkland bus yard, and for painting of the 8th and Geary Substation.

Embarcadero Plaza Terminal

Meetings were held during the year with the Department of Public Works, the Redevelopment Agency, the Recreation and Park Department, and the Port Authority

Washington-Mason Cable Car barn



Before



After

in connection with the Embarcadero Plaza of the proposed Ferry Park. As a result, the Department developed plans and specifications for the southerly relocation of the existing trolley and motor coach terminal loop at the Embarcadero between Mission and Market Streets, to permit development of the park. The work will be incorporated in a Department of Public Works contract.

Municipal Transit System Modernization Plan

Due to the current age of Municipal Transit System equipment and because of the impetus of BART construction, the Public Utilities Commission presented a modernization proposal to the electorate of San Francisco. This plan envisioned an entirely new and modern Municipal Transit System and would entail a total cost of approximately 300 million dollars; financed by a Bond Issue plus Federal Grant Funds. The proposal was defeated at the polls in November, and at year's end, a new proposal for Muni modernization was in preparation.

Status of Municipal Transit System Construction Contracts

A summary of Municipal Transit System construction contracts in progress during fiscal year 1966-67 is shown in Table 18.

Studies

Studies were made for a possible electric streetcar line along the Embarcadero to be operated over State Belt Line tracks, for a broken strand alarm for cable cars, and for an improved brake rod linkage on the "Powell" type cable cars. A study was made comparing the physical capabilities and costs of a new type of track brake with those of soft pine track brakes.

A new architectural type combination street light and anchoring pole was developed for the Golden Gateway project. (Clay Street Widening).

Several Committee for Utilities Liaison on Construction and Other Projects (CULCOP) meetings were attended by Utilities Engineering Bureau staff to coordinate the construction at the new Army Street circle. A contract presently under preparation will temporarily reroute the No. 47 Trolley Coach and will re-establish the Army-Potrero terminal upon completion of this traffic interchange.

The Bureau prepared plans and specifications for relocating trolley wires along Stanyan Street between Fulton and Hayes Streets to accommodate a street widening project.

Radios for Buses

Near the end of the year, ten Muni buses were equipped with two-way radios. The equipment was obtained through a courtesy loan from Motorola Corporation, and will operate temporarily on the dispatching frequency.

A purchase order for the purchase and installation of 15 two-way radios and two base stations was issued to Motorola. Application was also made to the Federal Communications Commission for a license to operate the 15 radios as mobile stations.

An application was prepared for a Federal Grant in the approximate amount of \$108,000 for the installation of 190 more radios on Muni motor coaches.

To minimize the danger of accidents during broken cable strand occurrences, a contract is being prepared to install two-way radios on cable cars.

Rapid Transit

Meetings and discussions with Bay Area Rapid Transit District representatives and with the Market Street Development Task Force continued throughout the year on various items affecting Muni operation, such as traffic routing and scheduling for Muni vehicles during construction, relocation of trolley overheads, support of streetcar tracks and duct manholes, etc. Detailed attention was given to maintaining service during construction of the Civic Center, Montgomery Street, and Powell Street subway stations, and the possible Davis Street station. Meetings were also held to discuss relocation of Muni facilities at the Balboa Park Station and attendant problems of property acquisition at Elkton Yard.

Arrangements were made with the Pacific Gas and Electric Company to accommodate changes caused by BART in PG&E underground ducts and manholes, space in which is used for streetcar electrical feeders.

Fare Collection Coordination

The Bureau has attended several meetings with representatives of BART, AC Transit, and Municipal Transit System to work out a mutually satisfactory method for offering fare discounts to riders who use a combination of two or more transit systems for a given journey.

This study has evolved to a choice of two proposals: either allowing a return trip discount or using special turnstiles in the BART system.

V. STREET LIGHTING

General

The lighting of public streets within the City of San Francisco is provided by facilities in part owned by the City, part furnished by Pacific Gas and Electric Company, and the remainder jointly owned.

During the fiscal year 1966-67, maintenance and repair of City-owned installations were performed under two contracts. One provided for group replacement of lamps in accordance with schedules developed by the Department. A second contract covered work required for repair of defective and damaged equipment, painting, and miscellaneous maintenance.

Under contract, Pacific Gas and Electric Company furnished street lighting service as directed, including the furnishing, maintenance and operation of Company-owned facilities. Certain services were provided also for City-owned facilities, including switching and control, replacement of individual lamps and globes, and emergency work required during other than normal working hours.

Electric energy for all City and Company-owned street light operation was supplied by the Hetch Hetchy power system.

For the fiscal year 1966-67 the cost of street lighting was less than 7 mills on the tax dollar. In 1947 it was nearly 24 mills. The average cost per unit last year was \$33.98 for 7,734 lumens per unit as compared to \$33.16 for 4,657 lumens twenty years ago. Utilization of more efficient luminaires in addition to improved light sources has enabled the City to realize nearly four times as much light on the streets and sidewalks without increased costs.

Operation and Maintenance

As of June 30, 1967, a total of 35,472 City-owned and Company-owned street lights were in service in public streets, parks, viaducts, tunnels, and underpasses, an increase of 209 during the year. A summary of the number and types of units in service at the end of the fiscal year is shown in Table 11.

A total of \$1,215,837 was expended for operation, maintenance, and repair of the street lighting system. Of the total cost, \$9,860 was paid by the State for its share of operation and maintenance of street lighting at intersections on City streets which are part of the State highway system.

A summary of expenditures for operation and maintenance of street lighting for the fiscal year is shown in Table 12.

Improvements

Rehabilitation of street lighting in the existing underground districts continued under the 1964 Street Lighting Bond Issue and through the Road Fund. Newly created underground districts were relighted through the Road Fund. Engineering and contract supervision is performed by the Department of Public Works, subject to approval by the Public Utilities Commission through the Bureau of Light, Heat and Power.

A total of 548 new street lights, valued at \$304,476, was added to the City-owned underground system. A summary of these additions is shown in Table 14, and the historical cost of City-owned street lighting construction is shown in Table 15.

Complaints and Damages

During the year only 75 complaints were received that required field investigation. This is less than one-third the number acted upon last year. This reduction was a result of the rehabilitation in both the overhead districts through the Pacific Gas and Electric Company's facilities and in the underground districts through the Bond Issue and the Road Fund.

In 1966-67, there were 88 accidents involving damage to City-owned street lighting property. Investigation was made as soon as possible to remove hazards to the public and obstructions to traffic. Every effort was made to secure reimbursement for damages incurred from responsible parties. Total cost of repairs to damaged City-owned street lighting property was \$35,856.

A summary of number of accidents, cost of repairs, and collections is shown in Table 13.

VI. UTILITY SERVICES TO MUNICIPAL DEPARTMENTS

General

Electric energy supplied to municipal departments is generated on the Hetch Hetchy power system and delivered to various service points by transmission and distribution facilities of Pacific Gas and Electric Company under a wheeling contract. Natural gas and steam supplied to municipal departments is furnished by Pacific Gas and Electric Company under a service contract.

Municipal Consumption Of Electricity, Gas And Steam

During the fiscal year 1966-67, a total of 361,937,603 kilowatt-hours of electricity was supplied through 856 accounts for municipal uses, including street lighting and traffic devices. City departments paid to the Hetch Hetchy Project a total of \$3,727,525 for electricity. At the same time, 16,938,891 hundred cubic feet of natural gas was consumed through 510 accounts, and 1,944,200 pounds of steam was utilized by one account, for which Pacific Gas and Electric Company was paid \$873,178 and \$3,822 respectively.

A summary of consumption and expenditures for these commodities is shown in Tables 9 and 10.

San Francisco International Airport

The Department rendered service to San Francisco International Airport in the operation of City-owned electric distribution system within the Airport boundary. This service included supervising installation and testing of the associated metering facilities, performing necessary monthly meter readings, and preparing statements for billing Airport tenants. During the fiscal year, 76 tenants were supplied a total of 87,624,878 kilowatt-hours of electricity through 324 metered and 30 unmetered accounts, for which the Airport Department collected \$1,089,501. Also, one tenant was supplied 16,608,996 pounds of steam through three meters, for which the Airport Department received \$15,485.

TABLE 1
HETCH HETCHY WATER SUPPLY AND POWER SYSTEM

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES (INCLUDING ENCUMBRANCES)
FISCAL YEAR 1966-67

OE	DESCRIPTION	BUDGET	ACTUAL	-UNDER, OVER
110	Permanent Salaries	\$ 385,166	\$ 408,563	\$ 23,397
111	Allowance for Overtime	5,248	5,473	225
112	Allowance for Holidays	2,380	4,049	1,669
113	Extended Work Week	22,520	21,500	-1,020
120	Temporary Salaries	18,730	17,842	-888
130	Wages	822,753	707,850	-114,903
139	Salaries - Gardeners	30,108	30,202	94
200	Contractual Service	86,715	103,222	16,507
216	Maint. & Repair of Auto Equipment	32,000	39,195	7,195
231-1	Purchase of Power for Resale	812,400	1,517,269	704,869
231-2	Service Charge for Transm. & Dist.	2,118,900	1,921,073	-197,827
251	Subsistence of Employees	8,500	8,500	-0-
295	Legislative Expense	2,000	295	-1,705
300	Material and Supplies	84,000	83,926	-74
640	Water Rights and Damage Claims	22,750	16,692	-6,058
641	Hydrography	30,510	30,462	-48
801	Accident Compensation	4,510	12,010	7,500
812	Fidelity Insurance	53	53	-0-
813	Automobile Insurance	4,060	2,045	-2,015
814	Fire Insurance	11,500	8,569	-2,931
815	Miscellaneous Insurance	10,000	6,844	-3,156
854	Membership Dues	271	246	-25
855	Fee to U.S. Gov't. - Raker Act	30,000	30,000	-0-
856	Maint. Roads & Trails - Raker Act	25,000	12,500	-12,500
860	Retirement Allowance	68,231	61,758	-6,473
862	Social Security	28,169	25,631	-2,538
865	Health Service System	10,900	11,659	759
870	Taxes	255,000	296,804	41,804
880	Rentals - Transmission Lines	54,000	54,000	-0-
900	Services of Other Depts.	480,831	480,831	-0-
TOTAL OPERATION AND MAINTENANCE		\$5,467,205	\$5,919,063	\$451,858
400	Equipment	58,700	40,810	-17,890
500	Additions and Betterments	92,225	92,225*	-0-
700	Reconstruction and Replacement	1,037,486	1,037,486*	-0-
	Replacement of Moccasin Powerhouse	1,195,000	1,195,000**	-0-
800	Bond Interest and Redemption	7,117,947	6,854,301	-263,646
TOTAL		<u>\$14,968,563</u>	<u>\$15,138,885</u>	<u>\$170,322</u>

* Unexpended balance transferred to unallocated balance of appropriation.

** Includes expenditures, encumbrances, and unencumbered balance allocated for subsequent construction.

TABLE 2
HETCH HETCHY WATER SUPPLY AND POWER SYSTEM
SUMMARY OF RECEIPTS AND EXPENDITURES
FISCAL YEAR 1966-67

	<u>BUDGET</u>	<u>ACTUAL</u>	<u>-UNDER OVER</u>
<u>RECEIPTS</u>			
Revenue from Sale of Electric Energy	\$12,178,200	\$11,182,468	\$ -995,732
Revenue from Sale of Water and Standby Charge, SFWD	2,500,000	2,500,000	-0-
Other Revenue	65,000	104,970	39,970
	<hr/>	<hr/>	<hr/>
Total Gross Revenue	\$14,743,200	\$13,787,438	\$ -955,762
Surplus from Prior Years	225,363	1,351,447	1,126,084
	<hr/>	<hr/>	<hr/>
Total Receipts	<u>\$14,968,563</u>	<u>\$15,138,885</u>	<u>\$170,322</u>
 <u>EXPENDITURES</u>			
Total Expenditures (from Table 1)	<u>\$14,968,563</u>	<u>\$15,138,885</u>	<u>\$170,322</u>

TABLE 3

HETCH HETCHY WATER SUPPLYPRECIPITATION, RUNOFF, STORAGE AND DELIVERYAS OF JUNE 30 BY FISCAL YEARS

<u>SEASON PRECIPITATION (INCHES)</u>	<u>AS OF JUNE 30 BY FISCAL YEARS</u>				
	<u>Normal</u>	<u>1962-63</u>	<u>1963-64</u>	<u>1964-65</u>	<u>1965-66</u>
Hetch Hetchy	33.81	40.08	25.28	41.33	30.20
Lake Lloyd	44.68	52.33	34.95	60.16	33.28
Approx. Percent of Normal		118%	75%	123%	89%
<u>WATERSHED RUNOFF (ACRE-FT.) (a)</u>					
Hetch Hetchy	715,300	787,200	596,200	879,800	719,100
Lake Lloyd)	418,300	444,800	338,100	569,100	384,600
Lake Eleanor)					
Total	1,133,600	1,232,000	934,300	1,448,900	1,103,700
Approx. Percent of Normal		109%	82%	128%	97%
<u>RESERVOIR STORAGE (ACRE-FT.) (a)</u>					
Hetch Hetchy	No-Spill				
Lake Lloyd)	Capacity	353,480	337,935	318,089	344,322
Lake Eleanor)	360,360	266,112	117,406	233,368	159,420
Total	268,800	25,681	8,946	26,339	6,025
	27,100	645,273	464,287	577,796	509,767
	656,260				591,350
<u>DELIVERY TO SFWD (ACRE-FT.) (a) (b)</u>					
Average per day		386	405	461	465
Maximum per day		494	533	530	697
Total for fiscal year		140,769	148,287	168,405	169,875
Total since operation of Hetch Hetchy Aqueduct began in 1934					2,864,551

NOTES: (a) One acre-foot equals 325,900 gallons or approximately 1/3 million gallons.

(b) Includes delivery to Livermore site, U. S. Atomic Energy Commission.

TABLE 4
HETCH HETCHY POWER SYSTEM

ELECTRIC ENERGY GENERATED, PURCHASED, AND DISTRIBUTED
FISCAL YEAR 1966-67

<u>PLANT DATA</u>	<u>Rated Capacity (Kilowatts)</u>	<u>Peak Generation (Kilowatts)</u>	<u>Annual Plant Factor - %</u>
Moccasin Powerhouse	70,000	82,000	84.1
Dion R. Holm Powerhouse	135,000	150,000	66.9
Robert C. Kirkwood Powerhouse	67,500	85,000	----
Early Intake Powerhouse (Standby)	3,600	---	----
Total	276,100		

ENERGY GENERATED AND PURCHASED (KILOWATT-HOURS)

Gross Generation

Moccasin Powerhouse	515,995,000	
Dion R. Holm Powerhouse	790,856,000	
Robert C. Kirkwood Powerhouse	211,154,000	
Early Intake Powerhouse (Standby)	3,100	1,518,008,100

Station Service

Moccasin Powerhouse	836,400	
Dion R. Holm Powerhouse	1,285,780	
Robert C. Kirkwood Powerhouse	324,670	
Early Intake Powerhouse (Standby)	100	2,446,950

Net Generation

1,515,561,150

Supplementary Energy

P.G. & E. Co. (Replacement)	0	
P.G. & E. Co. (Purchase)	255,197,672	255,197,672

Total

1,770,758,822

ENERGY DISTRIBUTED (KILOWATT-HOURS)

Sales

Municipal Accounts	361,956,734
Modesto Irrigation District	512,112,000
Turlock Irrigation District	206,568,000
Kaiser Cement & Gypsum Corporation	149,419,000
Kaiser Aluminum and Chemical Corporation	24,600,324
Norris Industries, Inc.	27,262,886
Dow Chemical Company	95,705,880
Hercules, Inc.	112,572,000
Shell Chemical Co.	50,346,000
California Ammonia Co.	18,992,040
Miscellaneous Customers	1,045,156

Non-Revenue

Project Use	3,716,688
Pacific Gas and Electric Company (Replacement)	110,919,058

Losses

Hetch Hetchy System	33,572,340
P.G. & E. System (Municipal and Industrial Accounts)	61,970,716

Total

1,770,758,822

TABLE 5
HETCH HETCHY POWER SYSTEM

COMPARATIVE ELECTRIC ENERGY SALES TO CUSTOMERS
FISCAL YEARS 1965-66 AND 1966-67
(Nearest 100,000 Kilowatt-Hours)

<u>CUSTOMER</u>	<u>1965-66</u>	<u>1966-67</u>
Municipal Accounts		
International Airport	105,600,000	118,300,000
Municipal Railway	67,800,000	67,800,000
Public Works	20,000,000	20,800,000
Street Lighting	39,700,000	40,600,000
Unified School District	23,000,000	24,300,000
Water Department	34,800,000	38,600,000
Other City Departments	47,600,000	51,600,000
Modesto Irrigation District	454,300,000	512,100,000
Turlock Irrigation District	173,100,000	206,600,000
Kaiser Cement & Gypsum Corp.	163,500,000	149,400,000
Kaiser Aluminum and Chemical Corp.	17,000,000	24,600,000
Norris Industries, Inc.	---	27,300,000
Dow Chemical Company	309,600,000	95,700,000
Hercules, Inc.	138,800,000	112,600,000
Shell Chemical Co.	---	50,300,000
California Ammonia Co.	---	19,000,000
All Other Sales	1,300,000	1,000,000
	<u>1,596,100,000</u>	<u>1,560,600,000</u>
TOTAL	<u>1,596,100,000</u>	<u>1,560,600,000</u>

TABLE 6
HETCH HETCHY POWER SYSTEM

COMPARATIVE GROSS REVENUE RECEIVED FROM SALE OF ELECTRIC ENERGY
FISCAL YEARS 1965-66 AND 1966-67
(Nearest \$1,000)

<u>CUSTOMER</u>	<u>1965-66</u>	<u>1966-67</u>
Municipal Accounts		
International Airport	\$ 868,000	\$ 985,000
Municipal Railway	679,000	678,000
Public Works	248,000	255,000
Street Lighting	422,000	430,000
Unified School District	373,000	390,000
Water Department	305,000	340,000
Other City Departments	606,000	650,000
Modesto Irrigation District	2,379,000	2,731,000
Turlock Irrigation District	920,000	1,098,000
Kaiser Cement & Gypsum Corp.	1,254,000	1,176,000
Kaiser Aluminum and Chemical Corp.	163,000	238,000
Norris Industries, Inc.	---	267,000
Dow Chemical Company	2,122,000	675,000
Hercules, Inc.	955,000	781,000
Shell Chemical Co.	---	345,000
California Ammonia Co.	---	128,000
All Other Sales	21,000	16,000
	<u>\$11,315,000</u>	<u>\$11,183,000</u>
TOTAL	<u>\$11,315,000</u>	<u>\$11,183,000</u>

HETCH HETCHY POWER SYSTEM

ELECTRIC ENERGY GENERATED, PURCHASED, AND DISTRIBUTED BY FISCAL YEARS --- KILOWATT-HOURS

	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
NET GENERATION						
Moccasin Powerhouse	390,534,500	527,332,900	527,570,400	516,508,000	522,006,700	515,158,600
Dion R. Holm Powerhouse	398,956,200	759,063,980	972,596,880	758,213,880	918,704,430	789,570,220
Robert C. Kirkwood Pwrhs.	---	---	---	---	---	210,829,330
Early Intake Powerhouse	0	28,990	4,395	8,600	0	3,000
Subtotal	789,490,700	1,286,425,870	1,500,171,675	1,274,730,480	1,440,711,130	1,515,561,150
SUPPLEMENTARY ENERGY						
P.G.& E. Co. (Replacement)	---	17,614,531	4,252,209	2,972,600	18,140,548	0
P.G.& E. Co. (Purchase)	401,108,639	10,765,908	114,717,222	335,040,505	233,597,451	255,197,822
Subtotal	401,108,639	28,380,439	118,969,431	338,013,105	251,537,999	255,197,822
TOTAL	<u>1,190,599,339</u>	<u>1,314,806,309</u>	<u>1,619,141,106</u>	<u>1,612,743,585</u>	<u>1,692,249,129</u>	<u>1,770,758,822</u>
DISTRIBUTION						
Sales						
Municipal Accounts	268,283,987	271,930,805	293,160,152	315,641,672	338,564,327	361,956,734
Modesto Irrig. Dist.	353,976,000	343,344,000	386,283,000	415,564,800	454,291,800	512,112,000
Turlock Irrig. Dist.	170,649,231	118,488,000	151,771,700	141,799,500	173,064,904	206,568,000
Kaiser Cement & Gypsum	141,273,870	138,773,712	155,387,840	151,942,208	163,529,750	149,419,000
Kaiser Alum. & Chemical	13,776,000	14,424,000	14,496,000	15,998,280	16,968,000	24,600,324
Norris Industries, Inc.	---	---	---	---	---	27,262,886
Dow Chemical Co.	156,102,552	301,810,584	303,892,152	313,575,384	309,582,408	95,705,880
Hercules, Inc.	---	23,544,000	133,758,000	134,568,000	138,762,000	112,572,000
Shell Chemical Co.	---	---	66,618,000	---	---	50,346,000
California Ammonia Co.	---	---	---	---	---	18,992,040
Misc. Customers	650,398	9,010,930	12,406,416	3,674,179	1,294,252	1,045,156
Non-Revenue						
Project Use	3,535,696	3,314,272	3,627,929	3,309,842	3,306,403	3,716,688
P.G.& E. Co. (Replacement)	13,426,572	8,440,168	0	21,113,148	0	110,919,058
Losses	<u>68,925,033</u>	<u>81,725,838</u>	<u>97,739,917</u>	<u>95,556,572</u>	<u>92,885,285</u>	<u>95,543,056</u>
TOTAL	<u>1,190,599,339</u>	<u>1,314,806,309</u>	<u>1,619,141,106</u>	<u>1,612,743,585</u>	<u>1,692,249,129</u>	<u>1,770,758,822</u>

TABLE 8
BUREAU OF LIGHT, HEAT AND POWER

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES AND RECEIPTS
(INCLUDING ENCUMBRANCES)

FISCAL YEAR 1966-67

<u>OE</u>	<u>DESCRIPTION</u>	<u>BUDGET</u>	<u>ACTUAL</u>	<u>-UNDER OVER</u>
<u>EXPENDITURES</u>				
110	Permanent Salaries	\$ 113,283	\$ 106,140	\$-7,143
111	Allowance for Overtime	750	744	-6
200	Contractual Services	2,650	1,529	-1,121
231	Lighting and Heating of Public Buildings - General	973,825	926,506	-47,319
231-1	Lighting and Heating of Public Bldgs. - Special Funds	3,191,985	3,240,334	48,349
231-2	Lighting of Public Streets - Pacific Gas and Electric Co.	658,278	648,754	-9,524
231-3	Lighting of Public Streets - Hetch Hetchy	413,206	420,391	7,185
300	Materials and Supplies	725	527	-198
400	Equipment	450	447	-3
813	Auto Insurance	300	213	-87
860	Retirement Allowance	5,886	5,886	-0-
862	Social Security	2,614	2,614	-0-
865	Health Service System	822	1,386	564
	TOTAL	<u>\$5,364,774</u>	<u>\$5,355,471</u>	<u>\$-9,303</u>

RECEIPTS

Interfund Receipts *	\$3,300,495	\$3,316,584	\$16,089
Ad Valorem Taxes	2,064,279	2,038,887	-25,392
TOTAL	<u>\$5,364,774</u>	<u>\$5,355,471</u>	<u>\$-9,303</u>

WORK ORDER APPROPRIATIONS FROM ROAD FUND

<u>DESCRIPTION</u>	<u>TOTAL FUNDS</u>	<u>EXPENDITURE</u>	<u>-UNDER OVER</u>
Alteration and Repair of Street Lighting Structures	\$ 3,000	\$ 3,000	-0-
Maintenance and Repair of Street Lighting Installations	119,500	116,844	\$-2,656
TOTAL	<u>\$122,500</u>	<u>\$119,844</u>	<u>\$-2,656</u>

* Transfers from other departments.

TABLE 9
BUREAU OF LIGHT, HEAT AND POWER
EXPENDITURE FOR ELECTRICITY FOR MUNICIPAL PURPOSES
FISCAL YEAR 1966-67

DEPARTMENT	NO. OF ACCOUNTS	CONSUMPTION KILOWATT-HOURS	EXPENDITURE
Art Museum	1	564,732	\$ 6,882
Auditorium and Brooks Hall	3	4,519,834	47,885
Child Care Centers	9	86,105	2,186
City Planning	1	66,520	1,392
DeYoung Museum	1	2,769,500	26,699
Disaster Corps	2	2,686	106
Electricity	5	452,909	7,740
Farmers Market	1	8,478	222
Fire (a)	60	2,126,600	46,594
Hassler Health Home	1	750,600	8,255
Health	21	8,380,547	83,929
Hetch Hetchy	6	103,322	2,888
International Airport (Incl. resale)	7	118,289,070	984,789
Legion of Honor	5	351,527	6,321
Library	31	2,506,269	42,096
Log Cabin Ranch	12	295,617	8,202
Municipal Railway	39	67,806,384	678,069
Parking Authority	10	25,014	715
Police	19	574,162	12,387
Public Buildings	6	12,200,220	111,379
Public Works	50	20,570,920	250,070
Purchasing	6	394,290	6,364
Recreation and Park	210	9,011,347	154,491
Record Center	1	536	20
Sheriff	2	1,293,120	12,558
Social Services	6	787,250	10,794
Street Lighting Operations	-	40,557,214	420,391
Unified School District	230	24,262,593	389,846
War Memorial	1	958,868	12,907
Water	103	38,611,409	339,887
Youth Guidance	1	1,314,720	13,866
TOTAL MUNICIPAL DEPARTMENTS	850	359,642,463	\$3,689,930
Academy of Sciences	4	2,065,556	21,894
Mount Davidson Cross Lighting	-	(b)	1,300
State of Calif.: Street Lighting	1	(c)	9,860
Traffic Devices	1	229,584	4,541
TOTAL FROM HETCH HETCHY	856	361,937,603	\$3,727,525
Fire Dept., For Resale to Fort Mason	1	2,387,777	29,553
GRAND TOTAL	857	364,325,380	\$3,757,078

NOTES: (a) Electricity purchased for resale to Fort Mason excluded.
 (b) Included under Recreation and Park.
 (c) Included under Street Lighting Operations.

TABLE 10
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURE FOR GAS AND STEAM FOR MUNICIPAL PURPOSES
FISCAL YEAR 1966-67

NATURAL GAS

<u>DEPARTMENT</u>	<u>NO. OF ACCOUNTS</u>	<u>CONSUMPTION HUNDRED THERMS</u>	<u>EXPENDITURE</u>
Auditorium and Brooks Hall	2	752	\$ 71
Child Care Centers	8	29,955	1,882
City Planning	1	6,212	381
DeYoung Museum	2	295,801	17,116
Disaster Corps	1	366	35
Electricity	2	53,386	3,137
Farmers Market	1	514	44
Fire	59	682,632	39,636
Hassler Health Home	3	317,009	18,635
Health	20	4,027,331	176,316
Hetch Hetchy	2	2,554	212
International Airport	11	1,826,488	83,251
Library	28	100,476	6,294
Municipal Railway	13	264,249	15,412
Police	10	59,304	3,618
Public Buildings	3	1,449,484	67,754
Public Works	10	343,575	22,512
Purchasing	3	70,073	3,985
Recreation and Park	101	1,247,293	74,621
Registrar of Voters	1	7,258	438
Sheriff	2	421,681	18,799
Single Men's Rehabilitation Center	1	31,452	1,878
Social Services	5	46,337	2,742
Unified School District	202	4,654,639	262,491
War Memorial	3	219,880	12,742
Water	12	108,958	6,600
Youth Guidance	2	458,323	21,965
 TOTAL MUNICIPAL DEPARTMENTS	 508	 16,725,982	 \$862,567
Academy of Sciences	2	212,909	10,611
 GRAND TOTAL	 510	 16,938,891	 \$873,178

STEAM

(Does not include steam generated by City)

<u>DEPARTMENT</u>	<u>NO. OF ACCOUNTS</u>	<u>CONSUMPTION POUNDS</u>	<u>EXPENDITURE</u>
Social Services	1	1,944,200	\$ 3,882

TABLE 11
BUREAU OF LIGHT, HEAT AND POWER

STREET LIGHTS IN SERVICE

JUNE 30, 1967

<u>SIZE & TYPE OF LAMP</u>	<u>COMPANY- OWNED</u>	<u>JOINTLY- OWNED</u>	<u>CITY- OWNED</u>	<u>TOTAL</u>
<u>UNDERGROUND CONNECTED</u>				
<u>High Voltage Series Circuit</u>				
1,000-Lumen Incandescent	--	22	--	22
2,500 " "	310	29	349	688
4,000 " "	1,956	447	2,459	4,862
6,000 " "	738	592	4,585	5,915
10,000 " "	398	--	571	969
23,000 " Fluorescent	3	--	7	10
175-Watt Mercury Vapor	--	--	32	32
400 " "	11	45	145	201
1,000 " "	--	--	3	3
<u>Low Voltage Multiple Circuit</u>				
1,000-Lumen Incandescent	--	--	173	173
2,500 " "	17	4	67	88
4,000 " "	275	3	84	362
6,000 " "	74	9	100	183
10,000 " "	7	--	26	33
5,500 " Fluorescent	--	--	95	95
23,000 " "	38	--	7	45
100-Watt Mercury Vapor	--	--	9	9
175 " "	18	--	906	924
250 " "	30	--	151	181
400 " "	884	--	1,401	2,285
700 " "	--	--	42	42
1,000 " "	--	--	71	71
<u>OVERHEAD CONNECTED</u>				
<u>High Voltage Series Circuit</u>				
2,500-Lumen Incandescent	9	--	--	9
4,000 " "	125	--	42	167
6,000 " "	11	--	1	12
<u>Low Voltage Multiple Circuit</u>				
2,500-Lumen Incandescent	24	--	--	24
4,000 " "	57	--	12	69
6,000 " "	5	--	--	5
10,000 " "	--	--	1	1
175-Watt Mercury Vapor	15,209	--	--	15,209
250 " "	1,958	--	2	1,960
400 " "	817	--	6	823
TOTAL, JUNE 30, 1967	<u>22,974</u>	<u>1,151</u>	<u>11,347</u>	<u>35,472</u>
	64.77%	3.24%	31.99%	100%
TOTAL, JUNE 30, 1966	<u>23,046</u>	<u>1,195</u>	<u>11,022</u>	<u>35,263</u>
NET CHANGE DURING THE YEAR	-72	-44	+325	+209

TABLE 12
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURES FOR OPERATION AND MAINTENANCE OF STREET LIGHTING
FISCAL YEAR 1966-67

CONTRACTUAL SERVICE

P. G. & E. Company

Company-owned facilities (a)	\$899,692		
Jointly-owned facilities (a)	52,794		
City-owned facilities (b)	240,923		
Emergency service to City-owned facilities	<u>2,555</u>	\$1,195,964	
Less deduction for energy component		<u>506,278</u>	\$ 689,686

Emsco Electric Corporation

Group lamp replacement - City-owned facilities			31,251
--	--	--	--------

Lease-Lite Corporation

Maintenance and repair - City-owned facilities			
Routine maintenance		21,271	
Repair of damage caused by accidents (c)		14,852	
Repair of damage caused by equipment failure		<u>17,381</u>	53,504

MATERIAL AND SUPPLIES (FURNISHED BY CITY)

Damage caused by accidents (c)	6,336		
Damage caused by equipment failure	<u>4,113</u>		10,449

ELECTRIC ENERGY (HETCH HETCHY)

40,557,214 kwh @ \$0.01345 less 21% discount			<u>430,941</u>
--	--	--	----------------

TOTAL EXPENDITURE \$1,215,831

LESS AMOUNT PAID TO HETCH HETCHY FROM:

Gas Tax Funds for State Highway routes	9,860		
Recreation and Park Dept. for off-street lighting	<u>452</u>		<u>10,312</u>

TOTAL NET EXPENDITURE \$1,205,519

AVERAGE OPERATING COST

Based on number of lights in service June 30, 1967, average total cost of operation, maintenance and repair per light per year: \$33.98

- NOTES: (a) Includes maintenance, repair, fixed charges and electric energy for Company-owned facilities.
- (b) Includes replacement of individual lamps and broken glassware, service and switching charges, and electric energy.
- (c) When responsible party is known, claim is filed for recovery of costs. (See Table 13.)

TABLE 13

BUREAU OF LIGHT, HEAT AND POWER

ACCIDENT DAMAGE TO CITY-OWNED STREET LIGHTING

BY FISCAL YEARS

	1963-64	1964-65	1965-66	1966-67
Number of Accidents	91	100	94	88
Cost of Damage Repairs (a)	\$39,748	\$44,768	\$38,508 (b)	\$31,117
Average Cost Per Accident	437	448	353 (b)	354
Amount Billed Responsible Parties (c)	23,759	50,441	25,052	26,724
Amount Collected:				
By Bureau of Light, Heat and Power	15,995	14,825	10,566	11,393
By Bureau of Delinquent Revenue (d) (e)	7,803	3,741	11,237	7,500
Amount Abandoned (Uncollectible)	9,096	9,935	15,430	10,068
Amount Receivable June 30:				
Payable to Bureau of Light, Heat and Power	3,810	12,923	12,553	13,231
Payable to Bureau of Delinquent Revenue (e)	13,749	35,564	38,762	35,856

NOTES: (a) Includes administrative expense.

(b) Includes estimated cost of uncompleted work as of June 30, 1967.

(c) Includes only cases of current and previous year for which work was completed during the year.

(d) Includes installment payments on cases from previous years.

(e) Accounts are transferred to Bureau of Delinquent Revenue when:

1. Account is over 90 days old;

2. Installment payments are made;

3. Liability is denied;

4. Responsible party is deceased or his whereabouts unknown.

TABLE 14
BUREAU OF LIGHT, HEAT AND POWER

NEW CITY-OWNED STREET LIGHTING INSTALLATIONS
COMPLETED DURING FISCAL YEAR 1966-67

<u>Location</u>	<u>No. of Lights</u>	<u>Type of Light (a)</u>	<u>Value</u>
Financed by State Gasoline Tax:			
Dolores Heights	12	I	\$ 6,713
Funston Ave.	5	M	6,000
Golden Gate Heights	7	M	4,660
Hillcrest Court	2	M	1,670
Jefferson St. - Hyde to Powell	20	M	6,844
Locust St.	9	M	5,677
Pine St. - Franklin to Gough	4	M	8,785
Redevelopment Area - E1 - Cont. D	28	M	15,982
Redevelopment Area - E1 - Cont. E	11	M	8,050
Steiner and Clay Sts.	11	M	7,100
Telegraph Hill - Stages IV and V	27	M	20,129
Washington and Spruce Sts.	20	M	10,980
14th Ave.	5	M	3,780
27th St. - Castro to Noe	5	M	4,794
TOTAL	166		\$111,164
Financed by 1964 Street Lighting Bonds:			
Broadway - Davis to Powell	36	M	\$ 32,555
Fell and Oak Sts.	213	M	81,533
Financial District	28	M	19,100
Market St. - Valencia to Castro	100	M	55,127
TOTAL	377		\$188,315
Financed by Property Owners:			
Nibbi Court	2	M	2,000
Romer Way	3	M	3,000
TOTAL	5		\$ 5,000
GRAND TOTAL	548		\$304,479

NOTES: (a) I - Incandescent
M - Mercury Vapor

TABLE 15

BUREAU OF LIGHT, HEAT AND POWER

HISTORICAL COST OF CITY-OWNED STREET LIGHTING IMPROVEMENTS

Fiscal Year	Ad Valorem Taxes	Gasoline Taxes	Street Lighting Bonds	Property Owners	State Highway Dept.	Miscellaneous Sources*	Total
Prior to July 1, 1947	\$ 640,693	\$ 134,880	-	\$207,660	-	\$449,585	\$1,432,818
1947-48	112,615	76,768	-	112,847	-	15,405	317,635
1948-49	257,652	9,043	-	22,987	-	-	289,682
1949-50	303,629	27,194	-	12,394	-	6,350	349,567
1950-51	155,842	101,576	-	165,043	-	-	422,461
1951-52	27,154	47,698	-	23,695	\$ 22,650	5,806	127,003
1952-53	251,090	219,956	-	31,778	-	505	503,329
1953-54	142,151	22,181	-	23,495	2,274	1,239	191,340
1954-55	115,727	30,817	-	748	16,578	543	164,413
1955-56	15,704	48,620	-	2,484	19,181	1,360	87,349
1956-57	114,168	26,641	-	7,256	-	3,003	151,068
1957-58	2,501	64,942	-	18,199	4,142	-	89,784
1958-59	-	171,367	-	10,231	626	538	182,762
1959-60	-	100,126	-	35,874	10,242	4,083	150,325
1960-61	-	82,074	-	19,236	-	1,865	103,175
1961-62	-	200,113	-	116,376	24,550	7,993	349,032
1962-63	-	84,328	-	21,700	-	-	106,028
1963-64	-	340,108	-	32,556	6,000	-	378,664
1964-65	-	97,846	-	8,975	50,857	-	157,678
1965-66	-	474,673	\$522,899	-	-	-	997,572
1966-67	-	111,164	188,312	5,000	-	-	304,476
TOTAL	\$2,138,926	\$2,472,115	\$711,211	\$878,534	\$157,100	\$498,275	\$6,856,161
LESS:	Cost of portions removed prior to fiscal year 1966-67					295,720	
	Cost of portions removed during fiscal year 1966-67					117,742	
	Original Cost of City-owned facilities in service June 30, 1967						413,462
							\$6,442,699

* Includes WPA & PWA (1935-1942), Boulevard Construction (1932-1934), Municipal Railway, Park and Recreation, and Housing Authority.

TABLE 16

HETCH HETCHY WATER SUPPLY & POWER SYSTEMCONSTRUCTION CONTRACTSFISCAL YEAR 1966-67

<u>Contract No.</u>	<u>Description</u>	<u>Contractor</u>	<u>Contract Time Started</u>	<u>Contract Time Completed</u>	<u>Original Contract Price</u>	<u>Value of Work Done During Fiscal Year</u>
HH-331	Synchronous Generators Canyon Powerhouse	Ets-Hokin Corp.	12-2-63	5-10-67	\$ 831,725	\$ 257,409
HH-375	Concrete Encasement at Three Road Crossings	Robert Ganske	9-21-66	2-27-67	127,415	128,615
HH-376	Canyon Powerhouse	Peter Kiewit Sons' Co.	11-2-64	----	4,293,439	703,589
HH-377	Canyon Penstock	J. H. Pomeroy & Co.	6-26-65	6-9-67	2,322,000	1,192,298
HH-378	Bridge Crane for Canyon Powerhouse	Broadline Co.	11-23-64	9-13-66	80,350	12,670
HH-379	San Joaquin Pipeline No. 3 Section A	Vinnell Corporation	10-10-66	----	5,656,941	2,831,689
HH-382	Moccasin Powerhouse Replacement and Electrical Equipment	Halvorson - McLaughlin Constructors	2-27-67	----	4,096,515	224,628
HH-391	San Joaquin Pipeline No. 3 Connection to Oakdale Manifold	Underground Construction Co., Inc.	3-6-67	----	187,636	----

(Continued)

TABLE 16 - (Contd)
HETCH HETCHY WATER SUPPLY & POWER SYSTEM

CONSTRUCTION CONTRACTS						
FISCAL YEAR 1966-67						
Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
HH-392	Spillway Deflector Walls, Access Shaft Housing and Miscellaneous Work O'Shaughnessy Dam	Thomas Construction Co.	10-24-66	6-16-67	\$123,122	\$126,525
HH-397	New Moccasin Warehouse	Page Construction	11-14-66	4-6-67	109,987	109,987
HH-401	Electrical Utilities and 230 KV Towers at Moccasin	Hetch Hetchy	11-14-66	4-18-67	37,450	37,450
Purchase Order No.						
20968	Furnishing and Delivering Two Power Transformers New Moccasin Powerhouse	Toshiba America, Inc.	10-14-66	----	346,263	---
26820	New Moccasin Powerhouse Gantry Crane	Mitsui & Co. (U.S.A.), Inc.	12-16-66	----	164,229	---
42626	Butterfly Valve for Canyon Tunnel Drain Line	Mitsui & Co. (U.S.A.), Inc.	5-5-67	----	1,696	---

(Continued)

HETCH HETCHY WATER SUPPLY & POWER SYSTEM

\$6,132,176

TABLE 17
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS						
FISCAL YEAR 1966-67						
Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
A-252	Drainage Pump Station South Lomita Canal	S & Q Construction Co.	9-5-66	4-7-67	\$ 178,112	\$178,112
A-348	Construction of Pier FF	ColWel Construction Co.	7-19-65	3-1-67	692,590	376,184
A-354	Alterations to Central Terminal Building	Arntz Construction Co.	8-31-64	2-10-67	1,203,000	193,959
A-381	Pavement Reconstruction and Runway 10R Extension	L. C. Smith Co.	5-2-66	8-31-66	505,790	195,444
A-382	Demolition and Removal of Obstructions - Runway 10R	National Demolition Corp.	7-25-66	----	26,573	20,089
A-386	Outbound Baggage Conveyors South Side Central Terminal	Mathews Conveyor Co.	5-24-65	7-29-66	72,066	5,189
A-387	Alterations to Piers C and D	Wilner Construction Company	10-31-66	----	120,218	120,218
A-396	In-Runway Lighting, Runway 28L and Taxiway J	Rosendin Electric, Inc.	7-25-66	----	231,594	171,793

(Continued)

TABLE 17 - (Contd)
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS FISCAL YEAR 1966-67						
Contract No.	Description	Contractor	Contract Time Started	Completed	Original Contract Price	Value of Work Done During Fiscal Year
A-398	12-kv Electric Service	Brayer Electric Co.	5-17-65	7-15-66	\$ 76,883	\$22,013
A-401	Construction and Maintenance Base - Plot 17	A. M. Hardy & Co.	3-28-66	9-2-66	87,998	22,439
A-404	Additional Baggage Conveyors South Terminal Building	Mathews Conveyor Co.	10-18-65	11-30-66	153,197	7,660
A-416	Central Terminal Building Unit No. 2	QRS Neon Co.	10-11-65	8-19-66	28,722	3,790
A-431	Painting Blast Fences and Canopy	C. L. Disheroon Painting Co.	8-8-66	9-9-66	6,533	6,533
A-433R	Waterproof & Roof Drainage So. Terminal Piers F & G	Wilco Construction Co.	6-27-66	3-3-67	41,943	43,068
A-434	Traffic Control for Taxiway F Runways 1L and 1R	Abbett Electric Corp.	2-21-66	----	9,677	4,355
A-437	Fencing for Valet Parking	U. S. Steel - Cyclone	8-1-66	8-30-66	2,884	2,884
A-440R	Baggage Conveyor Systems 7 and 11 - South Terminal Building	Mathews Conveyor Co.	11-21-66	----	45,375	38,796

(Continued)

TABLE 17 - (Contd)
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS FISCAL YEAR 1966-67						
Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
A-442	Road R-2 Relocation	Lowrie Paving Co., Inc.	8-8-66	9-16-66	\$ 39,649	\$ 41,849
A-443	Replacement of Sewer Line at Pump Station No. 5	Associated Pipeline, Inc.	6-27-66	7-19-66	1,750	1,750
A-446	Pier FF - Signs	Walnut Creek Neon Co.	7-4-66	10-7-66	1,955	1,955
A-448	Cargo Building Partitions Plot 6A	ColWel Construction Co.	8-8-66	11-18-66	4,583	4,583
A-450	Constr. South Oxidation Pond & Pumping Facilities	Oscar Holms	8-15-66	1-17-67	32,400	33,807
A-451	Pavement Reconstruction Taxiway E	O. C. Jones & Sons	3-27-67	----	219,307	147,846
A-452	Apron Pavement for Cargo Building No. 5A	Lowrie Paving Co., Inc.	10-31-66	----	216,497	141,997
A-455	Alterations to Sewage Pumping Station No. 2 (Emergency)	Dean C. Buehler, Inc.	1-9-67	4-13-67	7,800	7,800
A-456	Pier D Signs	Walnut Creek Neon Co.	2-6-67	4-5-67	3,151	3,151
A-459	Add Operations Area Pier FF	Wilco Construction Co.	10-31-66	----	18,743	16,808

(Continued)

TABLE 17 - (Contd)
SAN FRANCISCO INTERNATIONAL AIRPORT

<u>Contract No.</u>	<u>Description</u>	<u>CONSTRUCTION CONTRACTS</u> <u>FISCAL YEAR 1966-67</u>		<u>Contract Time</u> <u>Started</u>	<u>Completed</u>	<u>Original Contract Price</u>	<u>Value of Work Done During Fiscal Year</u>
		<u>Contractor</u>					
A-460	Emergency Battery Bank and Battery Charger	Kennedy Electric		7-18-66	11-28-66	\$ 3,135	\$ 3,135
A-461	Silt Removal 1966-1967	McGuire & Hester		10-17-66	11-25-66	4,556	4,556
A-462	Replacement of Gas Appliances With Electric Field Lighting Bldg. (Informal)	Vee's Electric Co., Inc.		2-13-67	----	3,948	---
A-464	Relocation of Taxiway R	L. C. Smith Co.		10-31-66	----	106,151	38,800
A-465	Construction of Drainage Pump Station No. 5	Dean C. Buehler, Inc.		10-31-66	5-12-67	43,835	45,338
A-467	Replacement of Effluent Line Sewage Treatment Plant	Lowrie Paving Co., Inc.		4-10-67	5-11-67	6,785	5,632
A-469	Improvements and Additions to Mechanical Equipment South Terminal	C. S. Hardeman, Inc.		6-19-67	----	14,956	1,346
A-470	Grading for Glide Slope Site Runway 28L	L. C. Smith Co.		2-27-67	----	22,988	15,189
A-471	Baggage Facilities South Terminal	Wilco Construction Co.		12-12-66	----	24,120	19,463

(Continued)

TABLE 17 - (Contd)

SAN FRANCISCO INTERNATIONAL AIRPORTCONSTRUCTION CONTRACTSFISCAL YEAR 1966-67

Contract No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
A-473	Furnish & Install Entrance Controls - Parking Garage	St. Francis Electric Service	3-13-67	5-11-67	\$17,924	\$ 17,924
A-474	Modification of Substation I	D. W. Nicholson Corp.	2-6-67	3-29-67	3,944	3,944
A-475	New Partition Air Cargo Building No. 3	Kenneth E. Lind	2-6-67	3-7-67	1,966	1,966
A-477	Relocation of Sewage Discharge Pump - Pier F	C. S. Hardeman, Inc.	2-27-67	3-11-67	1,584	1,584
A-479	Reconditioning Light Fixtures South Terminal Upper Level Lobby	Lease-Lite Corp.	12-15-66	3-6-67	4,271	3,832
A-482	Directional Signs Central and South Terminals	QRS Neon Co.	2-27-67	5-12-67	1,890	1,890
A-489	Install Waterproof Membrane Third Level - Parking Garage	Malott & Peterson-Grundy	3-15-67	3-24-67	2,977	2,977

Total Amount of Airport Contract Construction Work Performed During Fiscal Year

\$1,981,648

TABLE 18
MUNICIPAL TRANSIT SYSTEM
CONSTRUCTION CONTRACTS
FISCAL YEAR 1966-67

Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
MR-491	Overhead Construction for Temporary Detour - 18th St.	Abbett Electric Corp.	10-25-65	1-9-67	\$41,317	\$19,952
MR-498	Visitors' Facility Cable Car barn	F. W. Jones, Inc.	5-1-67	---	38,926	1,751
MR-501	Miscellaneous Repairs Washington-Mason Cable Car barn	Bender Roofing	8-8-66	11-21-66	10,727	11,484
MR-505	Fence and Related Work Kirkland Bus Yard	Coast Fence Co.	8-15-66	9-7-66	3,749	3,749
MR-506	Painting - Fillmore Substation and Geary Car barn	A. Quandt & Sons	8-15-66	2-7-67	26,030	26,067
MR-507	Cable Car Drift Curve Washington and Mason Streets	Armtz Construction Co.	4-17-67	5-4-67	18,350	18,350
MR-509	Pole Relocation - Clay Street	R. Flatland Company	10-24-66	5-5-67	8,470	9,198
MR-510	Exhaust System 24th and Utah Shop	Atlas Heating and Ventilation	2-27-67	5-26-67	4,686	4,686

(Continued)

TABLE 18 - (Contd)
MUNICIPAL TRANSIT SYSTEM

CONSTRUCTION CONTRACTS

CONSTRUCTION CONTRACTS

Contract No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
MR-520	Exterior and Interior Painting Forest Hill Station	W. G. Thompson	5-29-67	---	\$ 12,321	\$ 9,000
MR-521	Sandblasting, Waterproofing and Painting Washington-Mason Cable Car barn	Western Waterproofing Co., Inc.	5-22-67	---	14,540	5,816
MR-522	Relocation of Trolley Coaches Mission to South Van Ness 16th to 17th Street	Abbett Electric Corp.	2-13-67	---	276,031	183,173
Total Amount of Municipal Transit System Contract Construction Work Performed During Fiscal Year						\$293,226

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* A P P E N D I X *
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HETCH HETCHY WATER SUPPLY, POWER AND UTILITIES ENGINEERING BUREAU
AND
BUREAU OF LIGHT, HEAT AND POWER

ORGANIZATION AND PERSONNEL

O. L. Moore	General Manager
<u>Hetch Hetchy Project</u>	
Administration: R. Bei	Assistant General Manager
Power Production: R. E. Collins	Senior Electrical Engineer
Water Production: D. H. Matlock	Senior Mechanical Engineer
Land and Water Resources: Vacant	Senior Civil Engineer
Operations: J. M. Woods	Superintendent of Operations
Accounting: Vacant	Chief Accountant

Utilities Engineering Bureau

Administration: W. F. Getts	Principal Civil Engineer
Planning: A. K. Wong	Senior Civil Engineer
Civil and Structural Engineering: R. G. Lee	Senior Civil Engineer
Electrical Engineering (Hetch Hetchy): S. Yakahi	Electrical Engineer
Electrical Engineering (Airport & Mun. Rwy.): R. A. Protti	Electrical Engineer
Mechanical Engineering: B. D. Kong	Associate Mechanical Engineer
Architectural: S. F. Davis	Senior Architect
Construction: P. J. Phillips	Senior Construction Engineer

Bureau of Light, Heat and Power

Street Lighting and Utility Services: L. R. Clark	Electrical Engineer
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1967-68
Preliminary

CITY AND COUNTY OF SAN FRANCISCO

PUBLIC UTILITIES COMMISSION

PRELIMINARY

ANNUAL REPORT

FISCAL YEAR 1967-68

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HETCH HETCHY WATER AND POWER SYSTEM

UTILITIES ENGINEERING BUREAU

AND

BUREAU OF LIGHT, HEAT AND POWER

O. L. MOORE
GENERAL MANAGER

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION

A N N U A L R E P O R T
FISCAL YEAR 1967-68

HETCH HETCHY WATER AND POWER SYSTEM
UTILITIES ENGINEERING BUREAU
AND
BUREAU OF LIGHT, HEAT AND POWER

O. L. MOORE
GENERAL MANAGER

ANNUAL REPORT

I. ORGANIZATION AND FUNCTIONS

Under policies established by the San Francisco Public Utilities Commission, HETCH HETCHY WATER AND POWER, UTILITIES ENGINEERING BUREAU and BUREAU OF LIGHT, HEAT AND POWER serves the City and County of San Francisco in the dual function of operating department and service bureau.

Hetch Hetchy Water and Power System is a municipally-owned system of storage reservoirs and aqueducts which collects water from the Tuolumne River watershed and delivers it to the San Francisco Water Department. Approximately three-fourths of the water supplied in San Francisco and the Water Department service area comes from this source. Hetch Hetchy also operates and maintains hydroelectric generating stations and high voltage transmission lines for the production and distribution of electric energy. Hetch Hetchy revenues support all its expenses.

The Utilities Engineering Bureau provides engineering services for Hetch Hetchy, San Francisco International Airport, and San Francisco Municipal Transit Ssystem and is responsible for design and construction supervision of all improvements for these utilities. Activities of the bureau are funded by Work Orders from these three departments.

The Bureau of Light, Heat and Power administers contracts for furnishing electric, gas, and steam services to municipal departments and handles monthly billings. It also administers contracts for operation and maintenance of City-owned street lighting. Financing, design, and construction of City-owned street lighting improvements are under the jurisdiction of Department of Public Works. In accordance with provisions of the City and County Administrative Code, plans for these

improvements must be approved by the Public Utilities Commission through this bureau. This bureau is financed by appropriations of municipal departments and gas tax funds.

For fiscal year 1967-68, the Department administered budgeted funds for operation, maintenance, engineering, and construction as follows:

<u>Budget</u>	<u>No. of Employees</u>	<u>Total Amount Appropriated</u>
Hetch Hetchy Project	117	\$16,657,998
Utilities Engineering Bureau	157	1,995,895
Bureau of Light, Heat and Power	12	5,585,110
1955 Hetch Hetchy Power Bond Fund	--	245,116 *
1956 Airport Bond Fund	--	13,024 *
1961 Municipal Water System Bond Fund	--	319,478 *
1962 Airport Bond Fund	--	78,865 *
		<hr/>
TOTAL	286	\$24,895,486

* Does not include funds previously appropriated for construction under way or completed during fiscal year 1967-68

II. HETCH HETCHY WATER AND POWER SYSTEM

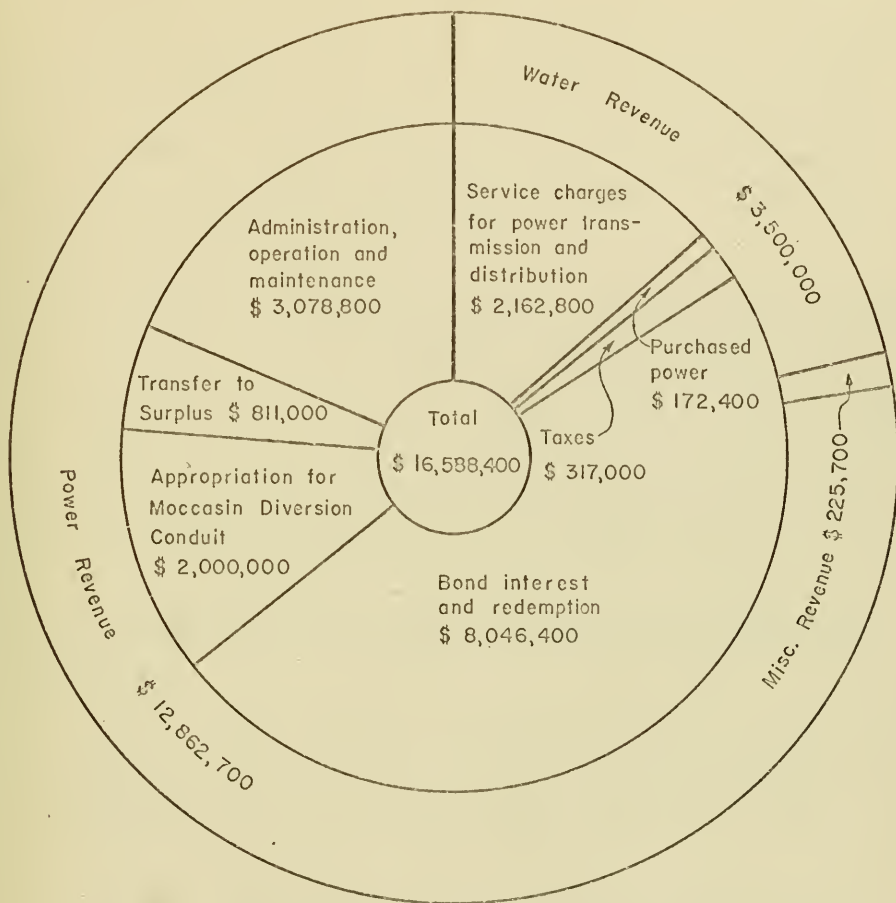
Revenue and Expenditures

Revenue from Hetch Hetchy Project operation is derived principally from two sources:

1. Budget transfer from San Francisco Water Department.
2. Sale of electric power and energy to San Francisco municipal departments, Modesto and Turlock Irrigation Districts in the San Joaquin Valley, and eight industrial customers -- Kaiser Cement and Gypsum Corporation's cement plant and Kaiser Aluminum and Chemical Corporation's aluminum foil plant, in Santa Clara County; chemical plants of Dow Chemical Company, Hercules, and Shell Chemical Company in Contra Costa County; chemical plants of California Ammonia Company and Air Products and Chemicals in San Joaquin County; and the Army Ammunition Plant at Riverbank in Stanislaus County, operated by Norris Industries.

Budget transfer from the San Francisco Water Department was \$3,500,000, compared to \$2,500,000 last year. Gross sales of electric energy amounted to \$12,856,970, compared to \$11,182,682 during the year 1966-67. This increase in electric revenue reflected the increase in sales during the year, 1,815,498,461 kilowatt-hours as compared to 1,560,580,020 kilowatt-hours for 1966-67. Revenue for service orders, rentals, meals and miscellaneous items was \$225,667.

Power and energy delivered to all City Departments increased by 7.4 percent this year with a 17.0 percent increase for the San Francisco International



HETCH HETCHY REVENUES AND EXPENDITURES
FISCAL YEAR 1967-68

Airport. Hetch Hetchy power is furnished to City Departments at cost, representing a saving to taxpayers for 1967-68 of \$832,607, compared to what power would cost if supplied by the local investor-owned utility.

Power and energy delivered to Modesto and Turlock Irrigation Districts increased by 8.8 and 20.3 percent respectively, this year. The increase reflected the tremendous load growths experienced by these two Irrigation Districts in the San Joaquin Valley who at present buy about 90 and 65 percent of their total power requirements from City, respectively.

During the year, \$137,025 was expended for purchase of electric power and energy for resale, compared to \$1,505,717 for 1966-67. The decrease reflects power operations during the spring of 1967 from the record runoff of the City's mountain watershed. The large surplus of electric energy which was delivered to Pacific Gas and Electric Company during this period was withdrawn during the ensuing months, thereby minimizing the need for purchased energy.

Interest and redemption costs for the year on outstanding Hetch Hetchy bonds totaled \$8,046,359.

Tables 1, 2 and 6 show comparative data on receipts, expenditures and sales of water and power from operation of the Hetch Hetchy water and power system.

Taxes

Taxes for 1967-68 on utility properties under jurisdiction of Hetch Hetchy, located outside the City and County of San Francisco, were paid in the following amounts:

<u>Tax-Levying Body</u>	<u>Assessed Value</u>	<u>Total Amount of Taxes Paid</u>
Alameda County	\$ 1,550	\$ 151.48
San Joaquin County	27,770	2,347.60
San Mateo County	2,335	194.36
Stanislaus County	75,620	6,552.24
Tuolumne County	3,701,020 (a)	306,689.10
Banta-Carbona Irrigation District	3,192	127.68
Oakdale Irrigation District	12,320	862.40
West Stanislaus Irrigation District	1,800	90.00
	<hr/>	<hr/>
TOTAL	\$3,825,607	\$317,014.86

(a) Includes \$3,000,000 assessment for water rights.

Water Production And Transmission

The winter of 1967-68 was a comparatively dry one. Precipitation on the City's mountain watershed was only 65% of normal. Fortunately, carryover storage from the previous wet year enabled the City to maintain normal water and power operations.

Only the relatively small Lake Eleanor Reservoir filled this year and the Hetch Hetchy and Lake Lloyd Reservoirs reached storage peaks of 82% of capacity in late June.

During the year, 59,920,200,000 gallons of water were diverted from the Tuolumne River watershed through the Hetch Hetchy Aqueduct for delivery to the San Francisco Water Department, representing 69% of the City's total customer consumption. This amount was delivered despite a two-month shutdown of the Aqueduct due to construction work at Oakdale Portal and Tesla Portal. In addition, 194,030,000 gallons were delivered to the United States Atomic Energy Commission at Mocho Shaft of the City's Coast Range Tunnel for use at the Lawrence Radiation Laboratory at Livermore; 6,191,000 gallons were delivered to the Groveland Community Services District in Tuolumne County.

Precipitation
200 %

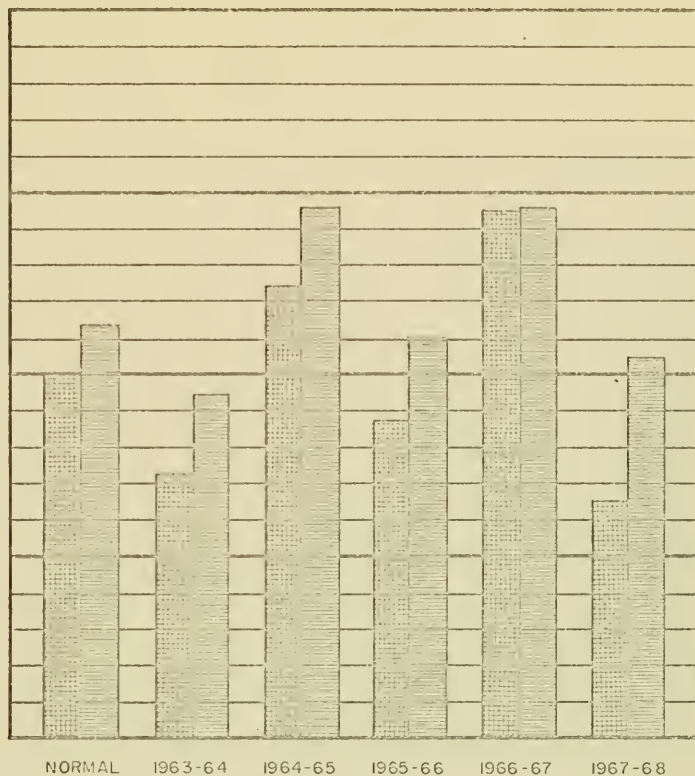
Acre Feet
of Runoff
2,000,000

150 % 1,500,000

100 % 1,000,000

50 % 500,000

0 % 0



Precipitation % Normal



Acre Feet of Runoff

RUNOFF FROM SAN FRANCISCO'S TUOLUMNE RIVER WATERSHED

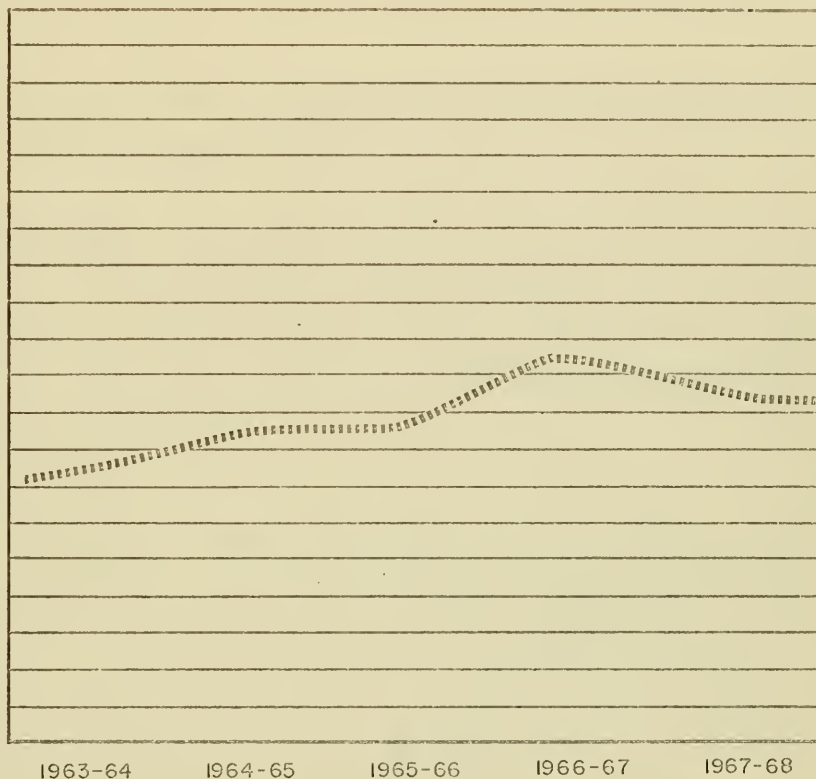
Acre Feet
Delivered
To SFWD
400,000

300,000

200,000

100,000

0



DELIVERIES OF WATER TO
SAN FRANCISCO WATER DEPARTMENT

On March 29, 1968, the three San Joaquin Pipelines were all placed in service for the first time throughout their entire length. The maximum recorded flow through these pipelines was 280 million gallons per day. When the Water Department completes the construction of increased capacity in its Bay Division pipelines the Hetch Hetchy Aqueduct will then be able to deliver in excess of 300 million gallons per day.

Table 3 shows comparative data on precipitation, runoff, storage and delivery of the Hetch Hetchy Water Supply system.

Power System Operation

The year 1967-68 represented the first full year's operation of the new Robert C. Kirkwood Powerhouse, providing a substantial increase in power revenue for Hetch Hetchy. A chart showing growth in Hetch Hetchy power revenue over the past 10 years is included in this report.

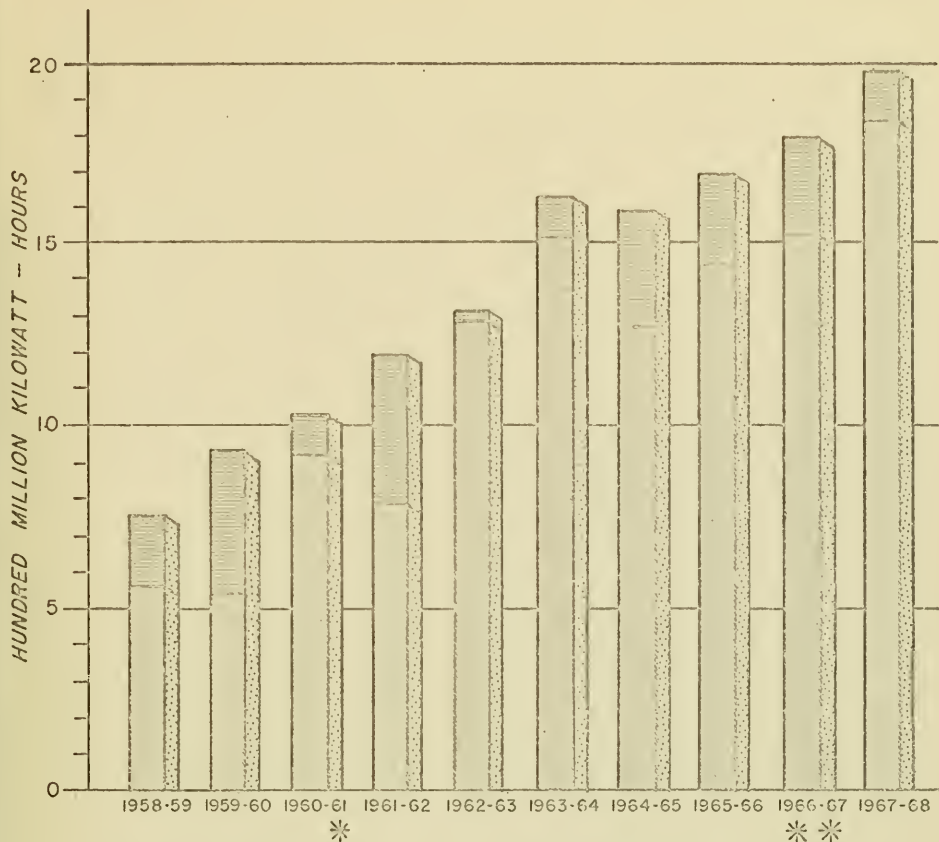
New Electric Customer

In November, 1967, the Shell Chemical Company shut down its fertilizer operation at its Pittsburg plant and terminated its contract with the P. G. & E. Company for electric service. This contract, which had been assigned to City by the P. G. & E. Company, was reassigned to P. G. & E. effective November 30, 1967. To replace the loss of Shell, the P. G. & E. Company assigned to City effective November 1, 1967, its electric service contract with the Air Products and Chemicals, Inc. of Lathrop, California.

Increased Transformer Capacity At Warnerville Substation

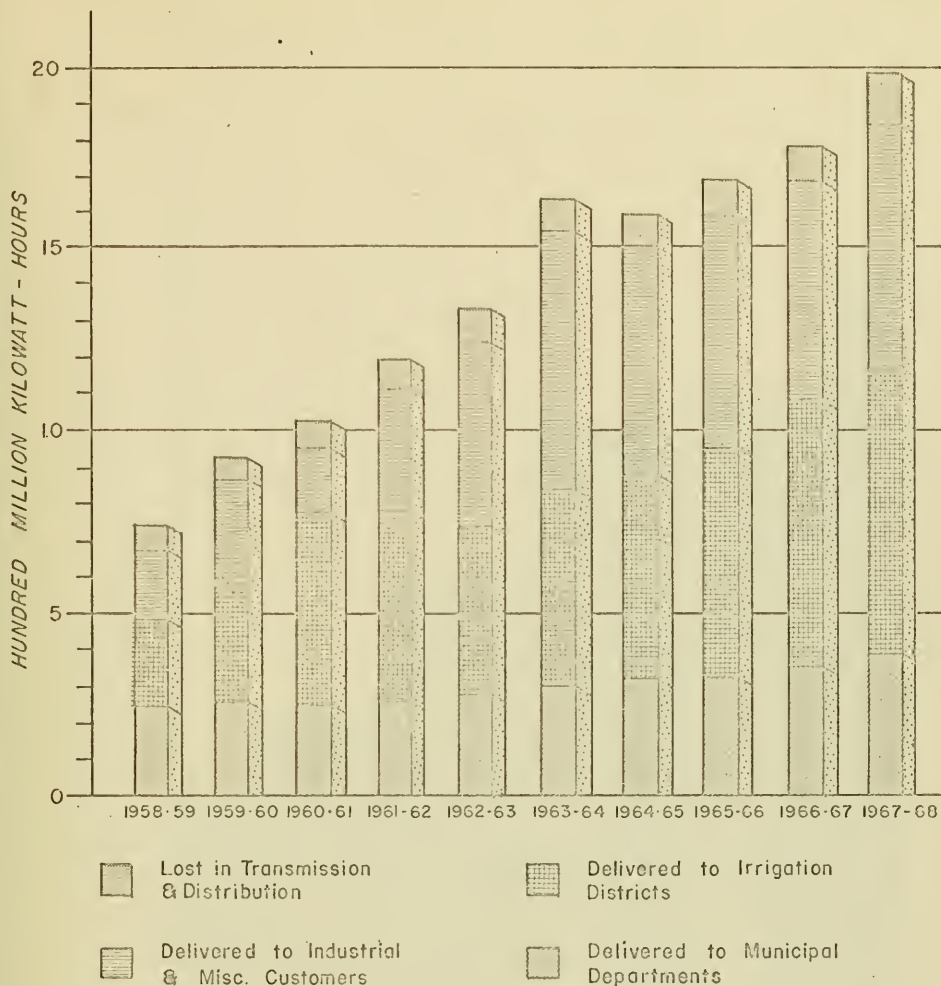
Bids are soon to be called for installation of a third autotransformer at Warnerville Substation, terminus of the Warnerville-Station J transmission system which

supplies power to the Irrigation Districts. The addition will double the existing station transformer capacity of 150 MVA, enough to carry the Irrigation Districts' requirement well into 1975. The total project, including the new transformer, oil circuit breakers, switches, etc., is estimated to cost \$583,000.



AVAILABLE ELECTRIC ENERGY - GENERATION AND SUPPLEMENTARY

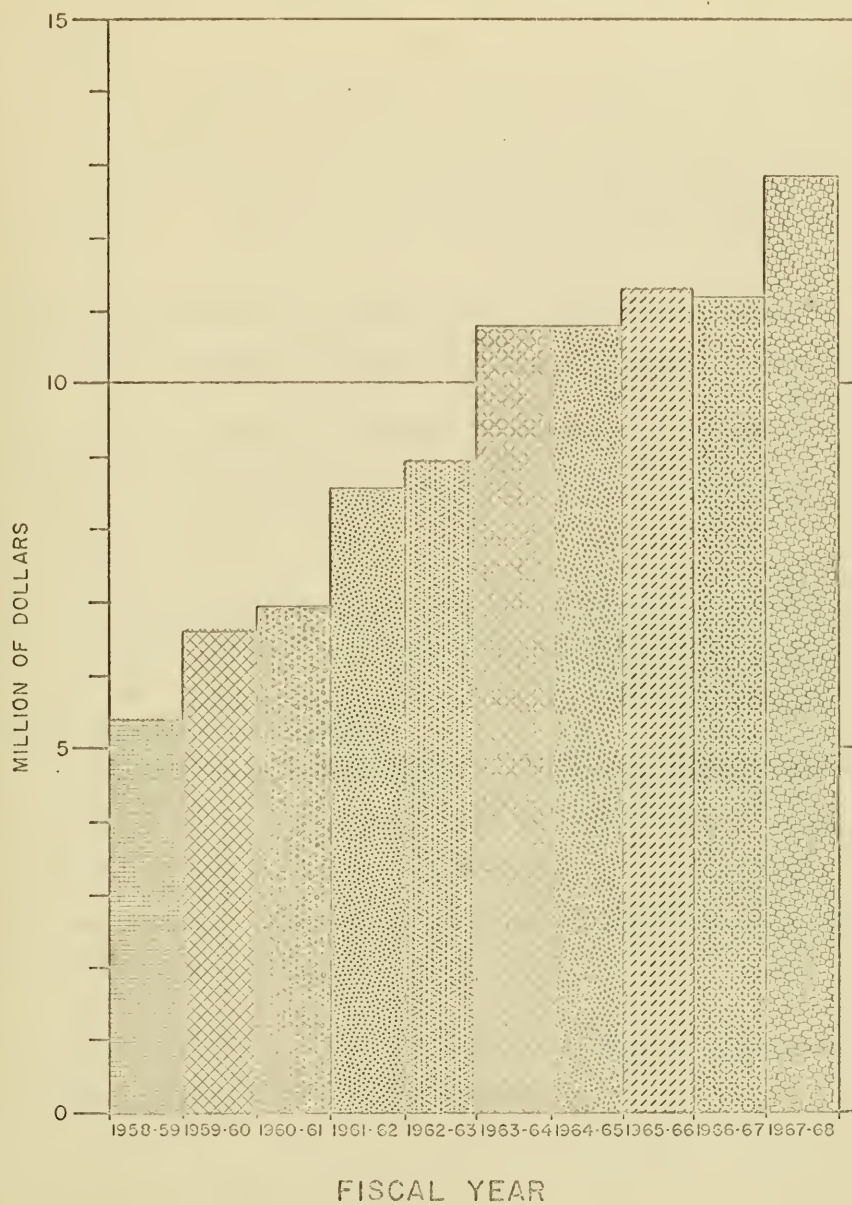
HETCH HETCHY POWER SYSTEM



DISTRIBUTION OF ELECTRIC ENERGY

HETCH HETCHY POWER SYSTEM

REVENUE FROM SALE OF ELECTRIC ENERGY



III. HETCH HETCHY ENGINEERING AND CONSTRUCTION

South Fork Crossing

An engineering study was completed for the protection of the Hetch Hetchy Aqueduct at the South Fork Crossing of the Tuolumne River. This exposed portion of the Aqueduct is vulnerable to damage from rock falls, land slides, floods and possible sabotage.

A total of eleven arrangements were studied. Cost factors were developed for nine of the plans. Three plans of the nine were selected for detailed analysis.

Based upon the detailed analysis of economical, operational and maintenance factors, a tunnel siphon arrangement with an estimated construction cost of \$245,000 was finally adopted.

At the end of the fiscal year, work was in progress at the site on core drilling preparatory to start of construction plans and specifications for the project.

Reconstruction And Replacement Projects

Budgeted reconstruction and replacement projects completed during the year included the repaving of the Cherry Valley Access Road from the top of Intake Grade to Cherry Valley Dam, a distance of about 19 miles. This work was performed under two contracts. Slide material was removed from the big switchback on the Intake Grade as part of the work.

The interiors of the three 16' x 65' drum gates of the spillway at O'Shaughnessy Dam were cleaned by sand-blasting and then painted.

The program to replace dead-end clamps on the Moccasin-Newark Transmission Line was continued. Work was done by City forces under two contracts. Towers 576N to 600N were painted.

The streets in Lower Moccasin Vaillage were repaved during this period.

At year's end, a contract was awarded for the replacement of the steel liner plates in the invert of the 10' diameter concrete Moccasin Creek diversion conduit under Moccasin Reservoir.

San Joaquin Pipeline No. 3

All work on the last 14-1/4 mile section of the 78-inch San Joaquin Pipeline No. 3 linking Oakdale Portal of the Foothill Tunnel and the meter house about two miles south of the City of Oakdale was completed. This included auxiliary contracts for the extension of the manifold, a new valve house and appurtenances at Oakdale Portal and the raising of the existing overflow shaft together with expanded and modernized chlorinating facilities at Tesla Portal, south of Tracy.

The new 47-1/2 mile San Joaquin Pipeline No. 3 was officially dedicated by Mayor Joseph Alioto on May 17, 1968, at the Alameda Creek East Portal of the Coast Range Tunnel near Sunol. The ceremony was attended by dignitaries from the Peninsula and East Bay counties.

Completion of the No. 3 line increased the capacity of the Hetch Hetchy Aqueduct across the San Joaquin Valley from 220 million gallons per day to over 300 million gallons per day.

Red Mountain Bar Siphon

A professional engineering services agreement was concluded between Modesto and Turlock Irrigation Districts and Clair A. Hill & Associates to provide design

and plans and specifications for the protection of the City's Red Mountain Bar Siphon due to future inundation by New Don Pedro Reservoir, currently under construction.

The construction contract will be under the jurisdiction of the Districts and funded by the New Don Pedro Project. Construction inspection will be furnished by the City.

Engineering Study For New Moccasin Creek Bypass

Clair A. Hill & Associates were engaged to make studies on the construction of a new bypass for Moccasin Creek in order to reduce the incidence of contaminating Hetch Hetchy Aqueduct water due to overtopping of Upper Moccasin Dam during periods of flash floods.

New Don Pedro Project

On September 1, 1967, construction of the giant New Don Pedro Project commenced. This \$100 million multi-purpose project is a joint undertaking of the Turlock and Modesto Irrigation Districts and the City and County of San Francisco. Since that date excavation of the diversion tunnel has been completed and concreting of the tunnel lining was well underway at year's end. Stripping of the damsite is underway and a contractor is clearing the reservoir area between the flow line of the existing Don Pedro Reservoir and the flow line of the new reservoir. Diversion of the river through the diversion tunnel is scheduled for September, 1968. At that time, construction of the dam embankment will commence. The dam is scheduled to be completed in the spring of 1971.

The New Don Pedro Dam and Reservoir are located on the Tuolumne River approximately 35 miles east of Modesto where the Tuolumne River emerges from the Sierra foothills.

The reservoir will have a storage capacity of 2,030,000 acre-feet and will be backed up behind an earth-rock dam approximately 580 feet high to be constructed approximately one and one-half miles downstream from the Districts' existing Don Pedro Dam, which will be inundated.

The reservoir will provide the additional storage capacity, on an exchange basis, to enable the City to meet its water requirements and those of its service area into the next century. The Districts will gain additional storage to firm up their irrigation requirements and power needs. The United States Army Corps of Engineers by contributing \$5,464,000 to the cost of the Project will acquire the necessary flood control on the Tuolumne River to handle anticipated future flood flows. The State of California will also contribute to the cost for the recreational benefits to be provided by the Project. The State Legislature has authorized an amount up to \$8,750,000 for State participation.

IV. AIRPORT ENGINEERING AND CONSTRUCTION

General

Passenger and freight traffic continued to swell at San Francisco International Airport, as improvements were being made daily, and sometimes nightly, to keep pace with the demand. A program was begun to minimize the introduction of engine exhaust fumes into the South Terminal. Facilities for the communications section in the Central Terminal were expanded. Additions and alterations to the baggage conveyor systems continued, and new directional signing was installed. The Parking Garage and lots were improved and additions made. The construction required for the conversion of Runway 10R-28L to Category II operation was completed, and filling was underway for the extension of Runway 28R to 11,870 feet. The City's fifth air cargo building was erected. Airport utilities systems were being extended and made more reliable. The interim heliport in San Francisco was completed and placed in operation. These and other facilities were planned, designed, and constructed with funds from Airport operating revenues, the \$9.8 million 1962 Airport bond issue, and the \$98 million Airport bond issue of 1967.

Construction Progress

The interim heliport, north of the Ferry building in San Francisco, was completed in January. Scheduled commercial service using the 28-passenger Sikorsky S-61 helicopter was inaugurated February 1, 1968. The heliport's passenger terminal building is located on the existing pier formerly used as a parking lot, and faces the Embarcadero. The building is single-story, with a natural finish redwood exterior, and has 1,350 square feet gross floor area. Space is provided for the parking of automobiles and taxis. The landing pad is on a portion of the timber pier reconstructed with new piling, decking, and paving. As an obligation under the three-way three-year lease

agreement with the Port Authority and the Redevelopment Agency, the City also completed four substitute parking lots west of the Embarcadero for use by displaced tenants of the Port Authority.

In the first phase of a program designed to minimize the introduction of jet and automobile exhaust fumes into the Airport's South Terminal building, air curtain fans were installed over various exterior floor and wall openings on the field side of the structure.

A nursery was installed on the upper level of the South Terminal. Its 670-square foot floor area is divided into a lounge room, and three dressing rooms each equipped with a crib and complete plumbing including counter and sink for baby care. The nursery is fully air conditioned and affords a view of the aircraft activity on the apron.

Flexible pipe connections were installed on pipe lines serving the South Terminal building to reduce excessive stresses on the lines caused by differential settlement between the building and adjacent soil. To facilitate maintenance and improve the performance of mechanical equipment in the building, new shut-off valves, water meters, and a steam pressure reducing station were added, and additional water supplies were installed to Piers F and G. The concrete floor of the inflight kitchen commissary and related area, in the lower level of the South Terminal, was repaired.

At the end of the year, work was about one-third complete on additions and general alterations to the baggage conveyor system in the South Terminal. The result will be an elimination of known trouble areas, and an improvement in the reliability and capacity of the system.

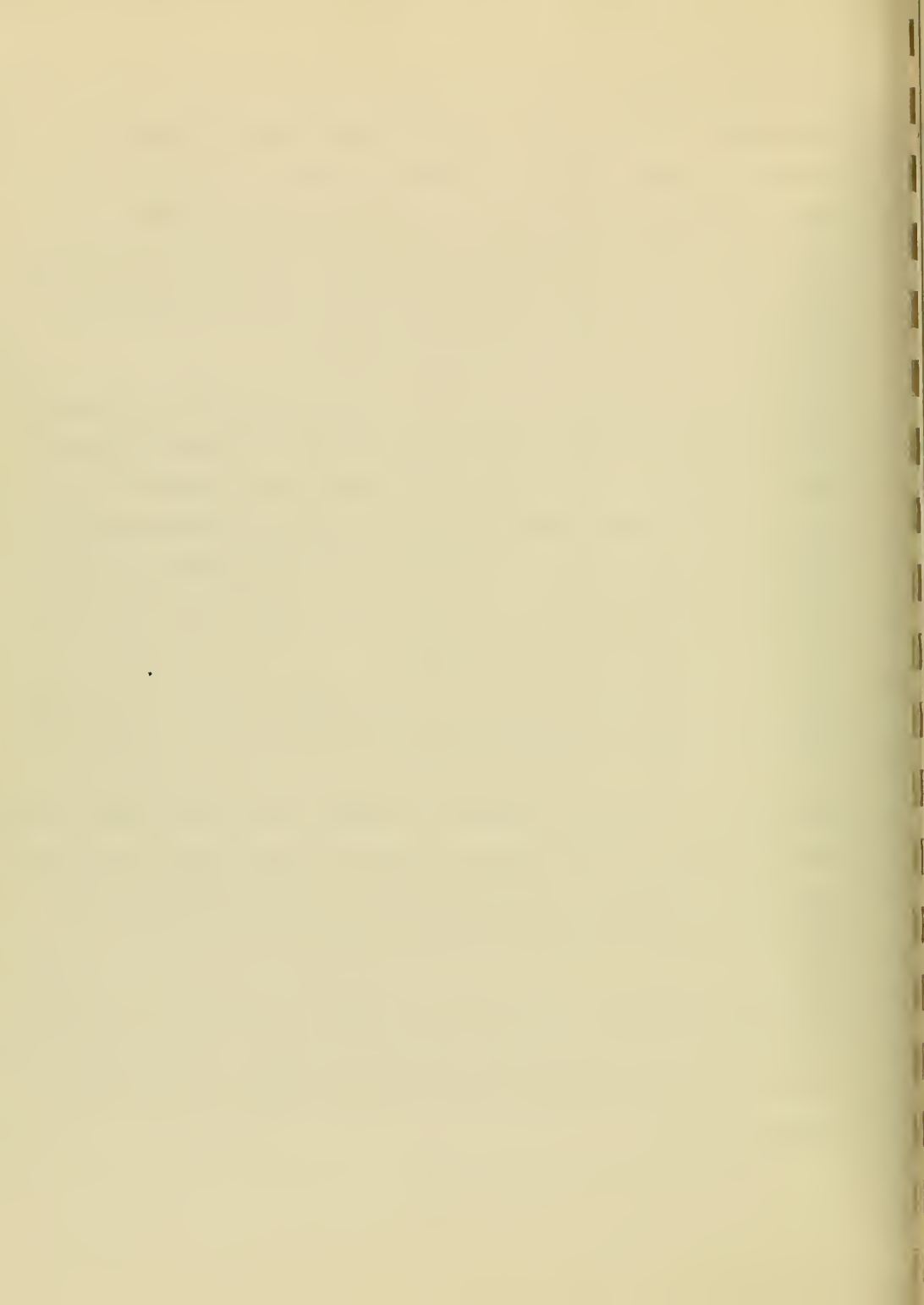
In the Central Terminal building, facilities for the Airport communications section were expanded to meet the needs imposed by increased traffic: the radio and communications general office was enlarged, a recording room was added, and improved ventilation, cooling, and acoustical treatment were provided. The existing 300-capacity automatic flight announcement selector units of the public address system were replaced with 600-capacity units, and the existing record players were modified to accommodate the new selectors.

The administration offices and conference room on the fourth floor of the Central Terminal were provided with improved visual, acoustical, and thermal glazing, to reduce jet engine noise to acceptable levels, and to provide improved vision of the airfield and thermal insulation against the eastern and southern solar exposures. Additional offices were provided by the installation of new partitions and the relocation of existing partitions. To reduce steam noise in certain offices, an existing steam pressure reducer was relocated.

Three aluminum flagpoles were installed on the concrete ledge of the third floor along the east side of the Central Terminal.

To increase by 50 percent the availability of power at the Central Terminal complex, and at the same time to improve the reliability of electric service in the area, a 2,000 kilowatt substation was being installed. Five power factor correcting capacitor banks were being placed at various locations in the building.

Continuing the program of unifying the directional signs throughout the terminal buildings and piers, new signs were installed in the public areas of Piers F and G. The signs have a blue background, white letters and symbols, and international languages.



At Pier G, finished ceiling and floor covering were installed in the "quarantine corridors" used by arriving international passengers. At Pier FF, an improved floor expansion joint was installed in the concourse, the toilet rooms were improved, and the lower level doors weatherstripped to reduce noise and jet fume infiltration. A new stairway was installed from the south concourse to the Southeast Court. Piers B, C, D, E, F, G and the field side of the north and south concourses were cleaned under contract.

To reduce traffic congestion at the Parking Garage the entrances were relocated side by side so that approaching drivers can see at a glance which entrances are open. The main entrance road was widened for the new entrances and an island constructed to separate traffic for the garage from traffic for the terminals. A separate bus parking lane was also provided.

Various mechanical improvements were completed in the Parking Garage: ventilation in the ticket storage room to prevent moisture damage; a reduction of the up-ramp speed from 120 feet per minute to 90 feet per minute for increased safety; and drainage facilities in the second level to prevent water seepage. Steel railings were placed around the pedestrian centers on each level to prevent the parking of automobiles in front of the elevators and moving ramps. Steel closure railings were provided at the open corners of the third and fourth level exterior walls to increase pedestrian safety. Protective bumpers were installed in front of the two cashiers' booths on the second level. Asphalt pavement on the roof was repaired. Sidewalks at the second level were saw-cut adjacent to the building to create hinges that will permit normal ground settlement without unsightly cracking.

At year's end, the directional signing on the approach road and in the Parking Garage was being revised to reflect the knowledge gained by operational experience. In the garage, starting at the ticket dispenser, the signing will direct people by names of airlines instead of terminal buildings. Along the entrance road, directions will be reduced to "Parking" or "Terminals"; at appropriate points these will be split into "Garage" or "Parking Lots", and "Flight Arrivals" or "Flight Departures", respectively.

The curb at the garage second level is being raised approximately four feet with precast panels. This is to provide both a physical and visual barrier to prevent random pedestrian crossings between the terminal buildings and the garage. Previously, the unobstructed vision across the roadway encouraged pedestrians to take this dangerous short cut.

Entrance controls were installed at Parking Lot No. 1 to enable cars to go in through the unattended entrance, and go out through the garage exits. The controls consist of a loop detector, ticket dispenser, traffic gate, and related equipment.

Miscellaneous work completed at the terminal complex included the erection of a City-furnished 7-foot high blast fence along the service road at gate position 27, recently converted to jet aircraft use. Asphaltic pavement leveling surfacing was applied to three depressed paved areas around Pier F, where rainwater had been ponding. The depressions were caused by differential settlement. Expansion joints were being installed in the 8-inch water line on both sides of the pedestrian tunnel between the Garage and the Central Terminal building, to allow the pipe to move with the settling ground.

A contract has been awarded, but work not yet started, for the installation of floodlights in the planting area of the Parking Garage, and new lamps and ballasts in the canopies of the Central Terminal building. These installations will enhance the night-time appearance of the Garage and will double the lighting level at vehicle loading zones of the Central Terminal.

Awaiting award was a contract for the extension of the Columbia marble flooring from the ticket lobby into the lounge area and main concourses of the Central Terminal. Matching marble had been out of production for some time, but had been gradually accumulated by local marble companies by salvage from buildings being razed in San Francisco.

On the landing field, the remaining work required to convert Runway 10R-28L to Category II status was completed. Category II is operation of an instrument runway down to 100-foot cloud ceiling and $\frac{1}{4}$ -mile visibility, the lowest minimums presently permitted by the Federal Aviation Administration. Work completed during the year included the installation of centerline lighting and touchdown zone lighting on Runway 28L, lighting of the high speed exit Taxiway J leading from Runway 28L, and grading for the FAA's glide slope facility. This work was supplemented by the FAA's final placement and testing of the electronic landing aids.

To make room for a general aviation parking apron which required relocation because of the Category II improvements, Taxiway R was moved northerly. The reconstruction of Taxiway E was also completed, with deteriorated bituminous pavement replaced by concrete pavement in the center 40 feet.

Improvements in the field lighting building comprised the installation of a load rheostat for the 1,000 kilowatt generator and the replacement of gas service and appliances with electric service, equipment, and appliances. The gas service was replaced because its repair would have been much more expensive than the new electrical installation, equipment, and appliances.

To supplement the FAA's installation of an Instrument Landing System on Runway 1R-19L, the City painted "all-weather" markings on the runway. Certain asphaltic pavements received an application of a specially designed emulsion of petroleum oils and resins to seal the cracks and retard aging and erosion.

The fill for the bayward extension of Runway 28R was well underway. The work involves the placement of approximately $2\frac{1}{2}$ million tons of fill, covering an area of 67 acres, to provide a foundation for extension of the runway by 2,170 feet, to a total paved length of 11,870 feet.

About two-thirds complete at year's end was a major contract for the extension of Taxiway G and the reconstruction of Taxiway F. To provide more efficient traffic circulation, Taxiway G was being extended a distance of about 1,500 linear feet across Runways 28L and 28R. About 2,300 linear feet of Taxiway F pavement, which had been deteriorating, was being reconstructed with concrete in the central 60 feet.

Air Cargo Building No. 5, the interim cargo facility adjacent to Road R-3, was erected and placed in operation. The building measures 100 feet by 600 feet, and can accommodate four air freighters on the apron side and 43 trucks simultaneously at the truck dock. Mechanized handling equipment will serve three aircraft parking positions, while mobile equipment will serve the fourth. A smaller two-story freight office building was erected on the structure's west side.

Awaiting certification was the site preparation contract for Air Cargo Building No. 7 on Plot 8N. The work involves filling the site to grade, and placing a two-foot surcharge to accelerate initial settlement of the area.

To expedite the movement of air mail and air cargo between the terminal area and the U.S. Post Office facility on Plot 10B, Cargo Building No. 5, and various airline facilities, roads were built for use by motorized carts along the north side of Taxiway R and down the center of Taxiway S.

To supply electric energy and telephone service to Plots 12 and 12A, power and telephone manholes and ducts were installed along Road R-3 from Road R-6 to and along Road R-21, and a 12 KV feeder cable was installed to Plot 12.

Water and drainage lines were being extended to serve Plots 12, 12A, and future areas to be developed to the north. All existing water lines serving the Airport were electrically insulated from the Water Department's peninsula supply mains to prevent electrolytic corrosion.

A sewage pumping station to serve Plots 12, 12A, 13, and 14 was almost complete. A gravity line and a force main were built in conjunction with the station.

Over 500 additional parking spaces were provided near the San Bruno Interchange, to accommodate both airline and Airport employees, with the construction of Parking Lot D on a former ponding area. The low lying land was filled and paved some distance from existing Road R-3, in anticipation of the State's expansion of the interchange.

A part of Road R-3 was relocated northerly, adjacent to Plot 6, so that there would be direct access to the road from facilities on both sides.

Status of Airport Construction Contracts

A summary of the Airport construction contracts in progress during the fiscal year 1967-68 is shown in Table 17.

Planning for Future Development

All engineering work required for Federal-Aid Airport Program Project No. 9-04-034-C825 was completed, and a Grant Agreement was executed between the Federal Aviation Administration and the City. Under the agreement, the Federal Government will pay an amount not to exceed \$1,067,407 towards the cost of the project. The improvements

contemplated are the extension of the terminal apron, the relocation of Taxiway B, the leveling and reconstruction of Runway 1R-19L, and centerline lighting for Taxiways D, E, F, and G.

A request for Federal aid was also submitted for fiscal year 1968-69, covering the southward extension of Taxiway G to the threshold of Runway 1R for improved traffic circulation and holding space, the northward extension of Crossover 10R-A for improved access and egress, the reconstruction of pavement at gate positions of Piers D and E, and the installation of centerline lighting on Taxiway B. In response to the request, the FAA tentatively allocated \$554,000 towards the cost of the project.

Several contracts were being advertised at the close of the fiscal year, including:

South Terminal Building. Alterations and additions to sidewalk baggage check-in conveyor systems 6 and 7 to increase system efficiency and the volume of baggage that can be handled; installation of directional signs; re-roofing portions of the building; addition of a locker room for the stationary engineers; and alterations to the temperature control systems.

Central Terminal Building. Replacement of 2,700 fluorescent lamps in the upper lobby; and installation of air conditioning for the City's new reception room at the Airport.

Piers and Concourses. Roof patching and repair; waterproofing the wall panels; installation of directional signs; and handrails at all Pier C gate rooms.

Air Cargo. The erection of Air Cargo Building No. 7 on Plot 9 as an interim cargo facility, measuring 120 feet by 480 feet, and accommodating 7 jet aircraft and 40 trucks; and the placement of apron pavement and utilities for this building.

Plans and specifications for the following projects were complete and awaiting various approvals prior to advertising:

Landing Field. Expansion of the terminal apron 100 feet radially outward, to permit the extension of piers and additional aircraft gate positions; relocation of Taxiway B to permit expansion of the apron; reconstruction of the existing perimeter taxiway; leveling and reconstruction of Runway 1R-19L; construction of an aircraft parking and servicing apron for general aviation use; and the extension of Taxiway R.

Maintenance Base. Repair of roof deck and re-roofing portions of Building C-01.

Parking Garage. Electrical improvements to elevators, ejector pumps, and other equipment.

Plans and specifications were in the process of preparation at the close of the fiscal year for the following: new acoustical tile for the upper level ceiling of the South Terminal building; sidewalk baggage check-in system at Pier G; overhead relocation of the last portion of underground steam lines serving the terminal complex; alterations to the auditing and space inventory equipment for the parking areas; construction of 400-car employees' Parking Lot C; fill along the northerly edge of the Airport for air cargo facilities; fill on Plot 14 and adjacent area for the Airport maintenance facility; centerline lighting for Taxiways D, E, F, and G;

addition of a dormitory to the field crash house for use of fire department personnel; installation of telephone ducts from San Felipe Avenue to Road R-6; modification of electrical Station P; and construction of Sewage Pumping Station No. 6A.

Improvements under study include concrete pads for airplane parking positions at Pier D, airport engineering and maintenance facilities, baggage conveyors between the parking garage and the terminal buildings, and trash and garbage disposal systems for the terminal buildings.

Miscellaneous Engineering

Although design and construction occupied the major engineering attention, there were many other varied engineering activities directed to the welfare and expansion of the Airport and the proper discharge of its community obligations.

A manual setting forth the uniform design standards and regulations covering tenant construction and alterations went into effect April 1, 1968. For the first time, design standards and codes, Airport rules and regulations, procedures for the submittal of plans and specifications, rent credit procedures, Art Commission requirements, etc., were spelled out in detail in a single document to serve as a guide for tenants, lessees, and their consulting engineers and architects. The manual was prompted by the need to efficiently process the tremendous amount of tenant work at the Airport, and is the result of numerous meetings and many months of preparation. A second manual of procedures, covering building permits, plan checking and permit fees, required inspections, certificate of occupancy, etc., is under preparation.

Technical assistance was given to several Airport tenants in developing plans for improvements. Tenant plans for \$7,300,000 worth of new construction were checked; construction in progress was inspected for compliance with approved plans and specifications, and for conformance to applicable codes and standards.

Monitoring of the oxidation ponds and drainage outfalls has continued to show evidence of a satisfactory industrial waste effluent, one that is in compliance with the requirements of the Regional Water Quality Control Board for both wet and dry weather flows. To assure that high quality standards are maintained, tenants' operations and discharges were periodically checked. Besides several meetings with the staff of the State Board, tenants' progress reports and quarterly progress reports were submitted, which included the results of laboratory analyses and bio-assays.

After many meetings with the cities of South San Francisco and San Bruno to discuss the feasibility of a joint sewage treatment venture, it was decided that the City should build and operate a new and much larger treatment plant at the Airport. Involved technical problems were the main considerations affecting the decision.

The formation of a joint flood control district with San Mateo County and San Bruno became a reality after many discussions. The district consists of San Bruno and the northern part of the Airport.

Besides the meetings already described, staff members of the Department attended other important meetings. There were briefings at Seattle, Burbank, and Los Angeles given by airframe manufacturers, in conjunction with the Airport Operators Council International technical conference. Meetings were held with the Corps of Engineers regarding filling of the seaplane harbor. Conferences were held with the FAA on many matters relating to Federal funding of airport projects. Staff members attended the estuarine pollution symposium held at Stanford University in August, and a conference organized by the City of San Jose to discuss water pollution problems in the South Bay area.

Information was furnished to the State Division of Highways for their use in designing the proposed widening of Bayshore Freeway. Plans were formulated and carried out for the relocation and consolidation of Department offices. The Airport's capital improvement program was prepared for use by the City Planning Commission. Lease drawings for Airport tenants were prepared as required.

Taxes

The following tabulation shows taxable land area, assessed valuation, and taxes paid for San Francisco International Airport property in San Mateo County for the fiscal year 1967-68 as compared with the two previous years:

	<u>1965-66</u>	<u>1966-67</u>	<u>1967-68</u>
Total Taxable Area (Acres)	4,945.81	4,945.81	4,945.76
Total Assessed Value	\$3,373,790	\$3,871,270	\$3,871,270
Total Amount Taxes Paid	\$ 238,074	\$ 294,453	\$ 294,689.58

The above tabulation includes taxes imposed by San Mateo County and the Cities of South San Francisco, San Bruno, San Mateo, Burlingame, and Millbrae, and excludes taxes paid by Airport tenants.

V. MUNICIPAL TRANSIT SYSTEM ENGINEERING AND CONSTRUCTION

General

During the year six contracts were completed for the painting of various Municipal Transit System buildings. Two other painting contracts were being performed at year's end. Also, three re-roofing contracts were completed.

A contract for the removal of trolley poles at various locations was completed.

A contract to re-pave the Presidio Avenue trolley coach yard was proceeding. Two contracts for work on overhead trolley wires were also underway.

Washington-Mason Cable Car barn

This Car barn has been officially designated as a National Historical Landmark.

During the year the initial phase of a visitors' gallery was completed, to enable visitors from all over the world to view this colorful page from San Francisco's past. Repairs were made to the floors which had seen heavy wear through the years from the 30 ton cable reels and the constant vibration of the powerhouse machinery. A contract was awarded for the second phase of the visitors' facility at the close of the fiscal year.

Rapid Transit

During the year construction was underway on the rapid transit subway beneath Market and Mission Streets.

Construction of the several stations along Market Street is requiring close co-operation between the Bay Area Rapid Transit District, its contractors, the Municipal Transit System, and the Utilities Engineering Bureau to maintain the schedules of Muni with a minimum of inconvenience to its patrons.

The Balboa Park rapid transit station will be located in the vicinity of Muni property along San Jose Avenue at Ocean and Geneva Avenues. To accommodate the new station,

and at the request of the Bay Area Rapid Transit District, the Utilities Engineering Bureau has undertaken several contracts to relocate Muni tracks and overhead lines, alter the existing shop building, relocate buildings and facilities, and demolish several structures. All work will be financed by the Bay Area Rapid Transit District.

Studies have been undertaken to determine the best type of rail transit vehicle to operate in the Muni level of the BART Market Street subway. A three-segment articulated train, approximately 100 feet long, has been determined to be the vehicle best suited to the efficient moving of large passenger volumes in the subway and on San Francisco streets. The Bay Area Rapid Transit District is now completing plans for the Muni level of the subway to suit the City's requirements which have been developed by the Utilities Engineering Bureau.

Studies

The Utilities Engineering Bureau has provided plans and specifications to the Department of Public Works for inclusion in their contracts for work under or near Muni tracks.

The Utilities Engineering Bureau has also reviewed submittals from the Redevelopment Agency and the Planning Commission.

To improve emergency communications and general supervision a new bus radio system was designed and installed. As an initial step, two base stations and twenty five motor coaches were supplied with two-way radios. A current contract will install radios on 200 additional motor coaches. Fifty percent of the cost of this system is being contributed by the U. S. Department of Housing and Urban Development.

Studies are currently underway for a radio system which will encompass all revenue vehicles including cable cars. These studies include the possibility of automatic radio trouble alarms and vehicle locators.

Embarcadero Plaza Terminal

The Golden Gateway Redevelopment Project will include a combination park and esplanade along the Embarcadero which will close the foot of Market Street, requiring the relocation of the Muni trolley and bus terminal. The Utilities Engineering Bureau has designed a new \$100,000 Muni terminal complex at Mission Street and the Embarcadero. Construction is now underway under a joint contract with the Department of Public Works.

The complex will include public convenience facilities and area lighting in a spacious and park-like setting. Funds for this work are being provided by the San Francisco Redevelopment Agency.

General

The lighting of public streets within the City of San Francisco is provided by facilities in part owned by the City, part furnished by Pacific Gas and Electric Company, and a small percentage, jointly owned.

During the year 1967-68, maintenance and repair of City-owned installations were performed under two contracts. One provided for group replacement of lamps in accordance with schedules developed by the Department. A second contract covered work required for repair of defective and damaged equipment, painting, and miscellaneous maintenance.

Under contract, Pacific Gas and Electric Company furnished street lighting service as directed, including the furnishing, maintenance and operation of Company-owned facilities. Certain services were provided also for City-owned facilities, including switching and control, replacement of individual lamps and globes, and emergency work required during other than normal working hours.

Electric energy for all City and Company-owned street light operation was supplied by the Hetch Hetchy power system.

Operation and Maintenance

As of June 30, 1968, a total of 35,559 City-owned and Company-owned street lights were in service in public streets, parks, viaducts, overcrossings, tunnels, and underpasses, an increase of 87 during the year. A summary of the number and types of units in service at the end of the fiscal year is shown in Table 11. A total of \$1,166,509 was expended for operation, maintenance, and repair of the street lighting system. Of the total cost, \$12,799 was paid by the State for its share of operation and maintenance of street lighting at intersections on City streets which are part of the State highway system.

A summary of expenditures for operation and maintenance of street lighting for the fiscal year is shown in Table 12.

Improvements

Rehabilitation of street lighting in the existing underground districts continued under the 1964 Street Lighting Bond Issue and through the Road Fund. Newly created underground districts were relighted through the Road Fund. Engineering and contract supervision is performed by the Department of Public Works, subject to approval by the Public Utilities Commission, through the Bureau of Light, Heat and Power.

A total of 724 new street lights, valued at \$507,890, was added to the City-owned underground system. A summary of these additions is shown in Table 14, and the historical cost of City-owned street lighting construction is shown in Table 15.

Damages

A record number of 122 damage cases involving City-owned street lights, occurred during the year 1967-68. A total of \$51,818 was billed to the responsible parties.

A summary of number of accidents, cost of repairs, and collections is shown in Table 13.

VII. UTILITY SERVICES TO MUNICIPAL DEPARTMENTS

General

Electric energy supplied to municipal departments is generated on the Hetch Hetchy power system and delivered to various service points by transmission and distribution facilities of Pacific Gas and Electric Company under a wheeling contract.

Natural gas and steam supplied to municipal departments is furnished by Pacific Gas and Electric Company under a service contract.

Municipal Consumption of Electricity, Gas And Steam

During the fiscal year 1967-68, a total of 388,836,371 kilowatt-hours of electricity was supplied through 871 accounts for municipal uses, including street lighting and traffic devices. City departments paid to the Hetch Hetchy Project a total of \$3,977,887 for electricity. At the same time, 16,600,677 hundred cubic feet of natural gas was consumed through 515 accounts, and 1,682,600 pounds of steam was utilized by one account, for which Pacific Gas and Electric Company was paid \$837,544 and \$3,365 respectively.

A summary of consumption and expenditures for these commodities is shown in Tables 9 and 10.

San Francisco International Airport

The Department rendered service to San Francisco International Airport in the operation of City-owned electric distribution system within the Airport boundary. This service included supervising installation and testing of the associated metering facilities, performing necessary monthly meter readings, and preparing statements for billing Airport tenants. During the fiscal year, 84 tenants were supplied a total of 102,080,500 kilowatt-hours of electricity through 289 metered and 28 unmetered accounts, for which the Airport Department collected \$1,214,629. Also, one tenant was supplied 19,631,832 pounds of steam through three meters, for which the Airport Department received \$17,873.

TABLE 1
HETCH HETCHY WATER AND POWER SYSTEM

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES (INCLUDING ENCUMBRANCES)
FISCAL YEAR 1967-68

OE	DESCRIPTION	BUDGET	ACTUAL	-UNDER, OVER
110	Permanent Salaries	\$ 466,347	\$ 435,568	\$ 30,779
111	Allowance for Overtime	6,000	5,846	154
112	Allowance for Holidays	3,750	3,358	412
113	Extended Work Week	26,096	20,004	6,092
120	Temporary Salaries	17,248	23,913	-6,665
130	Wages	808,962	792,312	16,650
139	Salaries - Gardeners	32,352	32,352	-0-
200	Contractual Service	113,415	50,746	62,669
216	Maint. & Repair of Auto Equipment	32,000	36,829	-4,829
231-1	Purchase of Power for Resale	812,400	172,400	640,000
231-2	Service Charge for Transm. & Dist.	2,118,900	2,108,750	10,150
251	Subsistence of Employees	8,500	15,685	-7,185
295	Legislative Expense	2,000	11	1,989
300	Material and Supplies	91,900	91,178	722
640	Water Rights and Damage Claims	28,100	14,280	13,820
641	Hydrography	31,458	31,127	331
801	Accident Compensation	4,510	11,588	-7,078
812	Fidelity Insurance	53	53	-0-
813	Automobile Insurance	4,060	2,100	1,960
814	Fire Insurance	13,000	9,567	3,433
815	Miscellaneous Insurance	10,000	6,894	3,106
854	Membership Dues	2,271	1,988	283
855	Fee to U.S. Gov't. - Raker Act	30,000	30,000	-0-
856	Maint. Roads & Trails - Raker Act	25,000	12,500	12,500
860	Retirement Allowance	70,894	67,791	3,103
862	Social Security	34,848	31,916	2,932
865	Health Service System	19,791	15,227	4,564
870	Taxes	297,000	317,015	-20,015
880	Rentals - Transmission Lines	189,000	183,500	5,500
900	Services of Other Depts.	512,850	512,850	-0-
TOTAL OPERATION AND MAINTENANCE		\$5,812,705	\$5,037,328	\$775,377
400	Equipment	70,149	66,134	4,015
500	Additions and Betterments	99,340	99,340 *	-0-
	Moccasin Diversion Conduit	2,000,000	2,000,000	-0-
700	Reconstruction and Replacement	528,207	528,207 **	-0-
800	Bond Interest and Redemption	8,147,597	8,046,359	101,238
TOTAL		\$16,657,998	\$15,777,368	\$880,650

* Unexpended balance transferred to unallocated balance of appropriation.

** Includes expenditures, encumbrances, and unencumbered balance allocated for subsequent construction.



TABLE 2
HETCH HETCHY WATER AND POWER SYSTEM
SUMMARY OF RECEIPTS AND EXPENDITURES
FISCAL YEAR 1967-68

	<u>BUDGET</u>	<u>ACTUAL</u>	<u>-UNDER OVER</u>
<u>RECEIPTS</u>			
Revenue from Sale of Electric Energy	\$13,918,300	\$12,862,677	\$-1,055,623
Revenue from Sale of Water and Standby Charge, SRWD	3,500,000	3,500,000	-0-
Other Revenue	65,000	225,667	160,667
Total Gross Revenue	\$17,483,300	\$16,588,344	\$ -894,956
Excess of Revenues over Expenditures	-825,302	-810,976	14,326
Total Receipts	\$16,657,998	\$15,777,368	\$880,630
<u>EXPENDITURES</u>			
Total Expenditures (from Table 1)	\$16,657,998	\$15,777,368	\$880,630

TABLE 3

HETCH HETCH WATER SUPPLYPRECIPITATION, RUNOFF, STORAGE AND DELIVERYAS OF JUNE 30 BY FISCAL YEARS

<u>SEASON PRECIPITATION (INCHES)</u>	<u>Normal</u>	<u>1963-64</u>	<u>1964-65</u>	<u>1965-66</u>	<u>1966-67</u>	<u>1967-68</u>
Hetch Hetchy	33.87	25.28	41.33	30.20	49.02	21.68
Lake Lloyd	45.31	54.95	60.16	35.28	66.69	30.80
Approx. Percent of Normal		75%	123%	89%	145%	65%
<u>WATERSHED RUNOFF (ACRE-FT.) (a)</u>						
Hetch Hetchy	719,300	596,200	879,800	719,100	839,900	665,300
Lake Lloyd)	422,400	333,100	569,100	384,600	559,800	375,900
Lake Eleanor)						
Total	1,141,700	934,300	1,448,900	1,103,700	1,409,700	1,041,200
Approx. Percent of Normal		82%	128%	97%	124%	91%
<u>RESERVOIR STORAGE (ACRE-FT.) (a)</u>	<u>No-Spill Capacity</u>					
Hetch Hetchy	369,560	337,935	318,089	344,322	316,010	293,680
Lake Lloyd	268,800	117,406	235,368	159,420	249,001	197,916
Lake Eleanor	27,100	8,946	26,339	6,025	26,339	26,339
Total	656,260	464,287	577,796	509,767	591,350	517,935
<u>DELIVERY TO SFWD (ACRE-FT.) (a) (b)</u>						
Average per day		405	461	465	572	506
Maximum per day		533	530	697	698	861
Total for fiscal year		148,287	168,405	169,875	208,821	185,342
Total since operation of Hetch Hetchy Aqueduct began in 1934				3,049,893		

NOTES: (a) One acre-foot equals 325,900 gallons or approximately 1/3 million gallons.

(b) Includes delivery to Livermore site, U. S. Atomic Energy Commission.

TABLE 4
HETCH HETCHY POWER SYSTEM

ELECTRIC ENERGY GENERATED, PURCHASED, AND DISTRIBUTED
FISCAL YEAR 1967-68

<u>PLANT DATA</u>	<u>Rated Capacity (Kilowatts)</u>	<u>Peak Generation (Kilowatts)</u>	<u>Annual Plant Factor - %</u>
Moccasin Powerhouse	70,000	82,000	86.3
Dion R. Holm Powerhouse	135,000	150,000	62.1
Robert C. Kirkwood Powerhouse	67,500	85,000	103.9
Total	<u>272,500</u>		

ENERGY GENERATED AND PURCHASED (KILOWATT-HOURS)

Gross Generation

Moccasin Powerhouse	529,315,000	
Dion R. Holm Powerhouse	734,271,000	
Robert C. Kirkwood Powerhouse	<u>614,151,000</u>	1,877,737,000

Station Service

Moccasin Powerhouse	802,500	
Dion R. Holm Powerhouse	1,050,680	
Robert C. Kirkwood Powerhouse	<u>991,380</u>	2,844,560

Net Generation

1,874,892,440

Supplementary Energy

P.G.& E. Co. (Replacement)	116,301,858	
P.G.& E. Co. (Purchase)	<u>0</u>	116,301,858

Total

1,991,194,298

ENERGY DISTRIBUTED (KILOWATT-HOURS)

Sales

Municipal Accounts	388,836,371
Modesto Irrigation District	557,184,000
Turlock Irrigation District	248,457,600
Kaiser Cement & Gypsum Corporation	175,655,640
Kaiser Aluminum and Chemical Corporation	24,334,411
Norris Industries, Inc.	60,637,939
Dow Chemical Company	74,829,720
Hercules, Inc.	112,338,000
Shell Chemical Co.	50,570,000
California Ammonia Co.	100,845,672
Air Products & Chemicals, Inc.	20,762,304
Miscellaneous Customers	<u>1,046,804</u>

Non-Revenue

Project Use	3,468,127
Pacific Gas and Electric Company (Replacement)	<u>60,350,036</u>

Losses

Hetch Hetchy System	44,568,312
P.G. & E. System (Municipal and Industrial Accounts)	<u>67,769,552</u>

Total

1,991,194,298

TABLE 5
HETCH HETCHY POWER SYSTEM

COMPARATIVE ELECTRIC ENERGY SALES TO CUSTOMERS
FISCAL YEARS 1966-67 AND 1967-68
(Nearest 100,000 Kilowatt-Hours)

CUSTOMER	1966-67	1967-68
Municipal Accounts		
International Airport	118,300,000	138,400,000
Municipal Transit System	67,800,000	67,100,000
Public Works	20,800,000	21,300,000
Street Lighting	40,600,000	41,200,000
Unified School District	24,300,000	26,200,000
Water Department	38,600,000	38,600,000
Other City Departments	51,600,000	56,000,000
Modesto Irrigation District	512,100,000	557,200,000
Turlock Irrigation District	206,600,000	248,500,000
Kaiser Cement & Gypsum Corp.	149,400,000	175,700,000
Kaiser Aluminum and Chemical Corp.	24,600,000	24,300,000
Norris Industries, Inc.	27,300,000	60,600,000
Dow Chemical Company	95,700,000	74,800,000
Hercules, Inc.	112,600,000	112,300,000
Shell Chemical Co.	50,300,000	50,600,000
California Ammonia Co.	19,000,000	100,800,000
Air Products & Chemicals, Inc.	---	20,800,000
All Other Sales	1,000,000	1,100,000
TOTAL	1,560,600,000	1,815,500,000

TABLE 6
HETCH HETCHY POWER SYSTEM

COMPARATIVE GROSS REVENUE RECEIVED FROM SALE OF ELECTRIC ENERGY
FISCAL YEARS 1966-67 AND 1967-68
(Nearest \$1,000)

CUSTOMER	1966-67	1967-68
Municipal Accounts		
International Airport	\$ 985,000	\$ 1,136,000
Municipal Transit System	678,000	671,000
Public Works	255,000	261,000
Street Lighting	430,000	438,000
Unified School District	390,000	414,000
Water Department	340,000	352,000
Other City Departments	650,000	700,000
Modesto Irrigation District	2,731,000	2,966,000
Turlock Irrigation District	1,098,000	1,277,000
Kaiser Cement & Gypsum Corp.	1,176,000	1,355,000
Kaiser Aluminum and Chemical Corp.	238,000	226,000
Norris Industries, Inc.	267,000	592,000
Dow Chemical Company	675,000	505,000
Hercules, Inc.	781,000	766,000
Shell Chemical Co.	345,000	339,000
California Ammonia Co.	128,000	689,000
Air Products & Chemicals, Inc.	---	146,000
All Other Sales	16,000	18,000
TOTAL	\$11,183,000	\$12,852,000

NETCH UTILITY POWER SYSTEM

ELECTRIC ENERGY GENERATED, PURCHASED, AND DISTRIBUTED BY FISCAL YEARS --- KILOWATT-HOURS

	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68
NET GENERATION						
Moceasin Powerhouse	527,352,900	527,570,400	516,508,000	522,006,700	515,158,600	528,512,500
Dion R. Holt Powerhouse	759,063,980	972,596,880	758,213,800	918,704,430	789,570,220	735,220,320
Robert C. Kirkwood Pwrhs.	---	---	---	---	210,829,350	613,159,620
Early Intake Powerhouse	28,990	4,595	8,600	0	5,000	0
Subtotal	1,286,425,870	1,500,171,675	1,274,750,480	1,440,711,130	1,515,561,150	1,874,892,440
SUPPLEMENTARY ENERGY						
P.G. & E. Co. (Replacement)	17,614,531	4,252,209	2,972,600	18,140,548	0	116,301,858
P.G. & E. Co. (Purchase)	10,765,908	114,717,222	335,040,505	235,397,451	255,197,672	0
Subtotal	28,380,439	118,969,431	338,013,105	251,537,999	255,197,672	116,301,858
TOTAL	1,314,806,309	1,619,141,106	1,612,743,585	1,692,249,129	1,770,758,822	1,991,194,298
DISTRIBUTION						
Sales						
Municipal Accounts	271,930,805	293,160,157	315,641,672	338,564,327	361,956,734	388,836,371
Modesto Irrig. Dist.	345,341,000	386,283,000	415,564,800	454,291,800	512,112,000	557,184,000
Turlock Irrig. Dist.	118,488,000	151,771,700	141,799,500	175,064,904	206,568,000	248,457,000
Kaiser Cement & Gypsum	158,775,712	155,387,840	151,942,208	163,529,750	149,419,000	175,655,640
Kaiser Alum. & Chemical	1,424,000	14,496,000	15,993,280	16,968,000	24,600,524	24,554,411
Norris, Industries, Inc.	---	---	---	---	27,262,886	60,637,950
Dew Chemical Co.	301,810,584	305,992,152	313,575,384	309,582,408	95,705,880	74,829,720
Hercules, Inc.	25,544,000	133,753,000	134,568,000	138,762,000	112,572,000	112,338,000
Shell Chemical Co.	---	66,618,000	---	---	50,546,000	50,570,000
California Ammonia Co.	---	---	---	---	18,992,040	109,845,672
Al. Prod. & Chemicals, Inc.	---	---	---	---	---	20,762,304
Misc. Customers	9,019,930	12,406,416	3,674,179	1,294,252	1,045,156	1,046,804
Non-Revenue						
Project Use	3,314,272	3,627,929	3,300,842	3,306,403	3,716,688	3,468,127
P.G. & E. Co. (Replacement)	8,440,168	0	21,113,148	0	110,919,058	60,350,036
Losses	81,725,838	97,739,917	95,556,572	92,885,285	95,543,056	111,877,674
TOTAL	1,314,806,309	1,619,141,106	1,612,743,585	1,692,249,129	1,770,758,822	1,991,194,298

TABLE 8
BUREAU OF LIGHT, HEAT AND POWER

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES AND RECEIPTS
(INCLUDING ENCUMBRANCES)

FISCAL YEAR 1967-68

OE	DESCRIPTION	BUDGET	ACTUAL	-UNDER OVER
<u>EXPENDITURES</u>				
110	Permanent Salaries	\$ 119,575	\$ 116,626	\$ 2,949
111	Allowance for Overtime	750	264	486
112	Holiday Pay	162	154	8
200	Contractual Services	2,400	1,229	1,171
231	Lighting and Heating of			
	Public Buildings - General	979,645	967,898	11,747
231-1	Lighting and Heating of			
	Public Bldgs. - Special Funds	3,381,403	3,456,311	-74,908
231-2	Lighting of Public Streets -			
	Pacific Gas and Electric Co.	655,043	634,809	20,239
231-3	Lighting of Public Streets -			
	Hetch Hetchy	430,561	425,827	4,734
231-4	Lighting of Public Streets -			
	Calif. Division of Highways	850	850	-0-
300	Materials and Supplies	725	694	31
400	Equipment	2,400	2,046	354
813	Auto Insurance	300	225	75
860	Retirement Allowance	6,224	6,224	-0-
862	Social Security	3,485	3,485	-0-
865	Health Service System	1,582	1,582	-0-
	TOTAL	\$5,585,110	\$5,618,224	\$-33,114

RECEIPTS

Interfund Receipts *	\$3,495,803	\$3,487,156	\$ 8,647
Ad Valorem Taxes	2,089,307	2,131,068	-41,761
TOTAL	\$5,585,110	\$5,618,224	\$-33,114

WORK ORDER APPROPRIATIONS FROM ROAD FUND

DESCRIPTION	TOTAL FUNDS	EXPENDITURE	-UNDER OVER
Maintenance and Repair of			
Street Lighting Installations	\$122,500	\$116,132	\$6,368

* Transfers from other departments.

TABLE 9
BUREAU OF LIGHT, HEAT AND POWER
EXPENDITURE FOR ELECTRICITY FOR MUNICIPAL PURPOSES
FISCAL YEAR 1967-68

DEPARTMENT	NO. OF ACCOUNTS	CONSUMPTION KILOWATT-HOURS	EXPENDITURE
Art Museum	1	596,988	\$ 7,315
Auditorium and Brooks Hall	1	4,264,200	44,939
Child Care Centers	9	89,779	2,279
City Planning	1	67,640	1,412
DeYoung Museum	1	2,398,400	23,550
Disaster Corps	2	2,058	90
Electricity	5	479,526	8,122
Farmers Market	1	6,950	186
Fire (a)	60	2,538,631	53,616
Hassler Health Home	1	722,800	8,118
Health	19	9,450,223	95,810
Hetch Hetchy	6	114,485	3,190
International Airport (Incl. resale)	9	138,379,077	1,135,771
Legion of Honor	2	360,566	6,109
Library	32	2,587,406	43,689
Log Cabin Ranch	14	849,079	15,670
Municipal Transit System	41	67,065,704	671,012
Parking Authority	10	27,867	825
Police	17	576,923	12,392
Public Buildings	8	13,549,987	122,298
Public Works	51	21,067,304	255,732
Purchasing	6	410,062	6,573
Record Center	1	540	20
Recreation and Park	181	9,020,859	152,599
Recreation and Park - Yacht Harbor	34	821,223	18,577
Sheriff	2	1,383,680	12,922
Social Services	6	1,171,618	15,597
Street Lighting Operations	-	41,229,872	425,457
Unified School District	236	26,207,064	414,183
War Memorial	1	999,412	13,431
Water	108	38,581,709	352,166
Youth Guidance	1	1,427,760	14,695
TOTAL MUNICIPAL DEPARTMENTS	867	386,449,392	\$3,938,345
Academy of Sciences	2	2,113,420	20,929
Mount Davidson Cross Lighting	-	(b)	1,000
State of Calif.: Street Lighting	1	(c)	12,205
Traffic Devices	1	273,559	5,408
TOTAL FROM HETCH HETCHY	871	388,856,371	\$3,977,887
Fire Dept., For Resale to Fort Mason	1	2,537,632	28,965
GRAND TOTAL	872	391,574,003	\$4,006,852

NOTES: (a) Electricity purchased for resale to Fort Mason excluded.

(b) Included under Recreation and Park.

TABLE 10
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURE FOR GAS AND STEAM FOR MUNICIPAL PURPOSES

FISCAL YEAR 1967-68

NATURAL GAS

<u>DEPARTMENT</u>	<u>NO. OF ACCOUNTS</u>	<u>CONSUMPTION HUNDRED CU. FT.</u>	<u>EXPENDITURE</u>
Auditorium and Brooks Hall	2	1,196	\$ 95
Child Care Centers	8	26,970	1,686
City Planning	1	5,626	342
DeYoung Museum	1	270,160	15,346
Disaster Corps	1	264	28
Electricity	2	46,433	2,684
Farmers Market	1	609	49
Fire	59	695,553	39,766
Hassler Health Home	3	301,472	17,538
Health	22	4,136,637	176,660
Hetch Hetchy	2	2,108	181
International Airport	9	1,678,281	74,433
Library	29	97,760	6,080
Municipal Transit System	14	256,630	14,814
Police	10	56,333	3,404
Public Buildings	4	1,402,323	63,990
Public Works	11	335,706	21,685
Purchasing	3	60,558	3,383
Recreation and Park	103	1,241,995	72,122
Registrar of Voters	1	7,587	453
Sheriff	2	414,319	19,164
Single Men's Rehabilitation Center	1	33,541	1,979
Social Services	4	67,293	3,914
Unified School District	203	4,414,926	244,556
War Memorial	3	219,253	12,482
Water	12	139,942	8,293
Youth Guidance	2	480,722	22,358
TOTAL MUNICIPAL DEPARTMENTS	513	16,394,197	\$827,485
Academy of Sciences	2	206,480	10,039
GRAND TOTAL	515	16,600,677	\$837,544

STEAM

(Does not include steam generated by City)

<u>DEPARTMENT</u>	<u>NO. OF ACCOUNTS</u>	<u>CONSUMPTION POUNDS</u>	<u>EXPENDITURE</u>
Social Services	1	1,682,600	\$ 3,365

TABLE 11
BUREAU OF LIGHT, HEAT AND POWER

STREET LIGHTS IN SERVICE

JUNE 30, 1968

SIZE & TYPE OF LAMP	COMPANY- OWNED	JOINTLY- OWNED	CITY- OWNED	TOTAL
<u>UNDERGROUND CONNECTED</u>				
<u>High Voltage Series Circuit</u>				
1,000-Lumen Incandescent	--	22	--	22
2,500 " "	307	26	285	618
4,000 " "	1,839	446	2,451	4,716
6,000 " "	775	585	4,273	5,633
10,000 " "	392	--	574	966
23,000 " Fluorescent	3	--	7	10
175-Watt Mercury Vapor	--	--	--	--
400 " "	5	45	143	193
1,000 " "	--	--	3	3
<u>Low Voltage Multiple Circuit</u>				
1,000-Lumen Incandescent	--	--	122	122
2,500 " "	17	4	72	93
4,000 " "	266	3	82	351
6,000 " "	83	9	115	207
10,000 " "	7	--	9	16
5,500 " Fluorescent	--	--	16	16
23,000 " "	38	--	95	133
100-Watt Mercury Vapor	--	--	39	39
175 " "	26	--	1,038	1,064
250 " "	30	--	276	306
400 " "	724	--	1,845	2,569
700 " "	--	--	84	84
1,000 " "	--	--	128	128
<u>OVERHEAD CONNECTED</u>				
<u>High Voltage Series Circuit</u>				
2,500-Lumen Incandescent	8	--	--	8
4,000 " "	87	--	42	129
6,000 " "	11	--	1	12
10,000 " "	27	--	--	27
<u>Low Voltage Multiple Circuit</u>				
2,500-Lumen Incandescent	25	--	--	25
4,000 " "	87	--	11	98
6,000 " "	6	--	--	6
10,000 " "	--	--	--	--
175-Watt Mercury Vapor	15,175	--	--	15,175
250 " "	1,973	--	--	1,973
400 " "	819	--	--	819
TOTAL, JUNE 30, 1968	22,728	1,140	11,691	35,559
	63.91%	3.21%	32.88%	100%
TOTAL, JUNE 30, 1967	22,974	1,151	11,347	35,472

TABLE 12
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURES FOR OPERATION AND MAINTENANCE OF STREET LIGHTING
FISCAL YEAR 1967-68

CONTRACTUAL SERVICE

P. G. & E. Company

Company-owned facilities (a)	\$890,765		
Jointly-owned facilities (a)	52,412		
City-owned facilities (b)	173,407		
Emergency service to City-owned facilities	<u>5,750</u>	\$1,122,394	
Less deduction for energy component		<u>484,895</u>	\$ 637,499

Enasco Electric Corporation

Group lamp replacement - City-owned facilities			29,081
--	--	--	--------

Lease-Lite Corporation

Maintenance and repair - City-owned facilities			
Routine maintenance		27,007	
Repair of damage caused by accidents (c)		19,683	
Repair of damage caused by equipment failure		<u>11,267</u>	57,957

MATERIAL AND SUPPLIES (FURNISHED BY CITY)

Damage caused by accidents (c)		11,405	
Damage caused by equipment failure		<u>5,110</u>	16,515

ELECTRIC ENERGY (METCH METCHY)

41,229,872 kWh @ \$0.01345 less 21% discount			<u>425,457</u>
--	--	--	----------------

TOTAL EXPENDITURE \$1,166,509

LESS AMOUNT PAID TO METCH METCHY FROM:

Gas Tax Funds for State Highway routes	12,799		
Recreation and Park Dept. for off-street lighting	<u>475</u>		<u>13,272</u>

TOTAL NET EXPENDITURE \$1,153,237

AVERAGE OPERATING COST

Based on number of lights in service June 30, 1968, average total cost of operation, maintenance and repair per light per year: \$32.43

- NOTES: (a) Includes maintenance, repair, fixed charges and electric energy for Company-owned facilities.
- (b) Includes replacement of individual lamps and broken glassware, service and switching charges, and electric energy.
- (c) When responsible party is known, claim is filed for recovery of costs. (See Table 15.)

TABLE 13

BUREAU OF LIGHT, HEAT AND POWER

ACCIDENT DAMAGE TO CITY-OWNED STREET LIGHTING

BY FISCAL YEARS

	1964-65	1965-66	1966-67	1967-68
Number of Accidents	100	94	88	122
Cost of Damage Repairs (a)	\$44,768	\$38,508	\$51,117	\$49,616 (b)
Average Cost Per Accident	448	553	554	407 (b)
Amount Billed Responsible Parties (c)	50,441	25,052	26,724	51,818
Amount Collected:				
By Bureau of Light, Heat and Power	14,825	10,566	11,393	19,577
By Bureau of Delinquent Revenue (d) (e)	3,741	11,237	7,500	12,580
Amount Abandoned (Uncollectible)	9,935	15,450	10,068	16,016
Amount Receivable June 30:				
Payable to Bureau of Light, Heat and Power	12,923	12,553	13,231	19,879
Payable to Bureau of Delinquent Revenue (c)	35,564	38,762	35,856	54,380

NOTES:

- (a) Includes administrative expense.
- (b) Includes estimated cost of uncompleted work as of June 30, 1968.
- (c) Includes only cases of current and previous year for which work was completed during the year.
- (d) Includes installment payments on cases from previous years.
- (e) Accounts are transferred to Bureau of Delinquent Revenue when:
 1. Account is over 90 days old;
 2. Installment payments are made;
 3. Liability is denied;
 4. Responsible party is deceased or his whereabouts unknown.

TABLE 14
BUREAU OF LIGHT, HEAT AND POWER

NEW CITY-OWNED STREET LIGHTING INSTALLATIONS
COMPLETED DURING FISCAL YEAR 1967-68

<u>Location</u>	<u>No. of Lights</u>	<u>Type of Light (a)</u>	<u>Value</u>
Financed by State Gasoline Tax:			
Bay, Mason and Powell	46	M	\$ 57,066
Blanken Underpass	5	I	2,500
Bosworth St., Contract 3	28	M	28,770
Burnett Ave. Extension	8	M	9,236
Burnett Ave. Improvement	5	M	6,410
Edgewood and Willard Sts.	23	M	17,422
Edith and Child Streets	4	M	3,350
Fisherman's Wharf, Stage 1	23	M	22,954
Gough St., California to Washington	9	M	11,973
Juri St.	2	M	1,497
Kearny and Chestnut Sts.	1	M	770
McLaren Park Road	3	M	4,979
Twelfth St., South Van Ness to Polson	4	M	8,464
Union and Kearny Sts.	1	M	558
TOTAL	162		\$175,949
Financed by 1964 Street Lighting Bonds:			
California and Gough Sts.	3	M	\$ 3,427
California St., Kearny to Van Ness	65	M	53,535
Contract 24	4	M	900
Downtown Area	28	M	18,000
Eucalyptus Drive	27	M	34,655
Geneva Ave., Mission to Santos	136	M	72,076
Grant Ave.	40	M	25,682
Jefferson St.	20	M	6,756
Sunnydale Area	61	M	64,052
Third St., Arthur to Bayshore	178	M	52,858
TOTAL	562		\$331,941
GRAND TOTAL	724		\$507,890

NOTES: (a) I - Incandescent
M - Mercury Vapor

BUREAU OF LIGHT, HEAT AND POWER

HISTORICAL COST OF CITY-OWNED STREET LIGHTING IMPROVEMENTS

Fiscal Year	Ad Valorem Taxes	Gasoline Taxes	Street Lighting Bonds	Property Owners	State Highway Dept.	Miscellaneous Sources*	Total
Prior to July 1, 1951	\$1,470,431	\$ 349,461	-	\$520,931	-	\$471,340	\$2,812,163
1951-52	27,154	47,698	-	23,695	\$ 22,650	5,806	127,003
1952-53	251,090	219,956	-	31,778	-	505	505,329
1953-54	142,151	22,181	-	23,495	2,274	1,239	191,340
1954-55	115,727	30,817	-	748	16,578	545	164,415
1955-56	15,704	48,629	-	2,484	19,181	1,560	87,549
1956-57	114,168	26,641	-	7,256	-	5,003	151,068
1957-58	2,501	64,942	-	18,199	4,142	-	89,784
1958-59	-	171,567	-	10,231	626	558	182,762
1959-60	-	100,126	-	55,874	10,242	4,095	150,325
1960-61	-	82,074	-	19,256	-	1,865	105,175
1961-62	-	290,115	-	116,376	24,550	7,993	549,032
1962-63	-	84,528	-	21,700	-	-	106,028
1963-64	-	340,108	-	52,556	6,000	-	378,664
1964-65	-	97,846	-	8,975	50,857	-	157,678
1965-66	-	474,673	\$522,899	-	-	-	997,572
1966-67	-	111,164	188,512	5,000	-	-	304,476
1967-68	-	175,949	331,941	-	-	-	507,890
TOTAL	\$2,138,926	\$2,618,064	\$1,043,152	\$878,534	\$157,100	\$498,275	\$7,364,051
LESS:							
Cost of portions removed prior to fiscal year 1967-68						415,462	
Cost of portions removed during fiscal year 1967-68						92,268	
							505,730
Original Cost of City-owned facilities in service June 30, 1968							\$6,858,321

* Includes WPA & PWA (1935-1942), Boulevard Construction (1932-1934), Municipal Transit System, Park and Recreation, and Housing Authority.

TABLE 16
HETCH HETCHY WATER AND POWER SYSTEM

Contract No.	Description	CONSTRUCTION CONTRACTS FISCAL YEAR 1967-68			Original Contract Price	Value of Work Done During Fiscal Year
		Contractor	Started	Contract Time Completed		
HH-376	Construction Canyon Powerhouse	Peter Kiewit Sons' Co.	11-2-64		\$4,293,439	\$ 0
HH-379	San Joaquin Pipeline No. 3 Section A	Vinnell Corporation	10-10-66	5-10-68	5,656,941	2,521,152
HH-382	Moccasin Powerhouse Replacement	Halvorsen-McLaughlin Constructors	2-27-67		4,096,515	2,868,913
HH-386	Alterations to Tesla Portal in the San Joaquin Division of the HJ Aqueduct	S & Q Construction	8-14-67		300,133	316,137
HH-387	Reconstruct Cherry Access Road	Geo. Reed, Inc.	7-31-67	8-30-67	128,882	126,214
HH-391	San Joaquin Pipeline No. 3 Connection to Oakdale Manifold and Related Work	Underground Construction Co., Inc.	3-6-67	6-26-68	187,636	186,912
HH-395	Sandblasting & Interior Painting of Spillway Drum Gates - O'Shaughnessy Dam	C. L. Disheroon Painting Co.	8-14-67	11-17-67	14,340	9,572
HH-398	Moccasin-Newark Transmission Line - Replacement of Dead-End Clamps (Towers 06-N to 113N)	HJ Water & Power Project	8-14-67	12-1-67	19,280	19,280
HH-402	Repairing Cherry Access Road Jones Point to Cherry River Bridge	George Reed, Inc.	12-4-67		83,688	82,725

(Continued)

TABLE 16 - (Cont'd)
HETCH HETCHY WATER AND POWER SYSTEM

Contract No.	Description	CONSTRUCTION CONTRACTS FISCAL YEAR 1967-68		Original Contract Price	Value of Work Done During Fiscal Year
		Contractor	Contract Time Started Completed		
III-403	Moccasin-Newark Transmission Line - Replacement of Dead-End Clamps (Towers 223-N to 388-N)	III Water & Power Project	4-8-68 6-26-68	\$31,600	\$31,600
III-405	Repaving Streets at Lower Moccasin Village	George Reed, Inc.	1-22-68 6-7-68	9,632	10,494
III-406	Moccasin-Newark Transmission Line - Painting Steel Towers (Towers 576-N to 600-N)	Gores Tank Co.	9-25-67 11-13-67	9,249	9,249
Total Amount of Hetch Hetchy Contract Construction Work Performed During Fiscal Year					<u>\$6,182,248</u>

TABLE 16

HETCH HETCHY WATER AND POWER SYSTEM

PURCHASE ORDERS FOR EQUIPMENT

FISCAL YEAR 1967-68

Purchase Order No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
75695	Oil Circuit Breakers for Warnerville Substation	I. T. E. Circuit Breaker Co.	2-20-68		\$ 188,297	\$ 0
88519	Six Power Transformers for Canyon Powerhouse	Allis-Chalmers Manufacturing Co.	12-8-64		368,040	0
R-7198	Electrical Insulator Assemblies (for H-382)	NGK	1-16-68	6-14-68	5,792	5,792
R-7199	Electrical Insulator Assemblies (for H-382)	Graybar Electric Co.	1-16-68	6-14-68	3,159	3,159
99783	Oil Circuit Breakers for Canyon Powerhouse	Westinghouse Electric Corporation	4-1-65	7-17-67	125,300	26,050
97984	Hydraulic Impulse Turbines for Meccasin Powerhouse	Hitachi New York, Ltd.	3-11-65		1,211,402	800,534
R-70155	Synchronous Generators for Meccasin Powerhouse	Ferrostaal Pacific Corporation	1-18-66		807,266	572,059
R-63758	Synchronous Generators for Meccasin Powerhouse	Ferrostaal Pacific Corporation	1-18-66		1,050	
R-20968	Power Transformers for Meccasin Powerhouse	Toshiba International Corporation	10-14-66		346,263	247,564

(Continued)

TABLE 16 - (Contd)
HETCH HETCHY WATER AND POWER SYSTEM

PURCHASE ORDERS FOR EQUIPMENT

FISCAL YEAR 1967-68

Purchase Order No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
26820	Gantry Crane for Moccasin Powerhouse	Mitsui & Company (U.S.A.), Inc.	12-16-66		\$ 164,229	\$ 142,451
40800	Transformer for Wamerville Substation	C. Itch & Co. (America), Inc.	4-25-67		168,465	0
42626	18" Butterfly Valve for Canyon Tunnel Drain Line	Mitsui & Company (U.S.A.), Inc.	5-23-67		1,763	0
45219	Oil Circuit Breakers for Moccasin Powerhouse	McGraw - Edison	6-28-67		192,894	153,108
65592	Oil Circuit Breakers for Moccasin Powerhouse	McGraw - Edison	6-28-67		1,484	
48574	Hydraulic Impulse Turbines for Canyon Powerhouse	Hitachi New York, Ltd.	8-8-63		1,038,679	103,828

Total Amount of Hetch Hetchy Purchase Orders for Equipment

\$2,054,545

TABLE 17
SAN FRANCISCO INTERNATIONAL AIRPORT

<u>CONSTRUCTION CONTRACTS</u> <u>FISCAL YEAR 1967-68</u>						
<u>Contract No.</u>	<u>Description</u>	<u>Contractor</u>	<u>Contract Time Started</u>	<u>Contract Time Completed</u>	<u>Original Contract Price</u>	<u>Value of Work Done During Fiscal Year</u>
A-363	Fill for Extension of Runway 28R	Piombo Construction Co.	10-2-67		\$2,151,600	\$764,184
A-396	In-Runway Lighting, Runway 28L and Taxiway J	Rosendin Electric, Inc.	7-25-66	9-29-67	231,594	12,410
A-434	Installation of Traffic Control for Taxiway F at Runways JL and LR	Abbett Electric Corp.	2-21-66	4-3-68	9,677	4,838
A-441	Parking Garage Signs	Federal Sign & Signal Corp.	3-18-68		46,584	0
A-444	Air Cargo Building No. 5	CSB Construction, Inc.	7-17-67	3-7-68	390,000	412,512
A-445R	Pier F and G Signs	Patrick Connally	10-23-67	2-21-68	13,462	14,583
A-451	Pavement Reconstruction - Taxiway E	O. C. Jones & Sons	3-27-67	7-28-67	219,307	47,284
A-452	Apron Pavement for Cargo Building No. 5A	Lowrie Paving Co., Inc.	10-31-66	8-4-67	216,497	66,975
A-454	Installation of Power and Telephone to Plot 12A	Brayer Electric Co.	10-23-67	6-11-68	52,600	52,935

(Continued)

TABLE 17 - (Contd)
SAN FRANCISCO INTERNATIONAL AIRPORT

Contract No.	Description	CONSTRUCTION CONTRACTS		Original Contract Price	Value of Work Done During Fiscal Year
		Contractor	Contract Time Started Completed		
A-463	Installation of Load Rheostat for 1000 kW Generator - Field Lighting Building	Prayer Electric Co.	12-11-67	\$ 23,777	\$ 23,000
A-464	Relocation of Taxiway R	L. C. Smith Co.	10-31-66	106,151	12,142
A-466	Construction of Interim Heliport North of Ferry Building	Manson Construction & Engineering - General Construction Co.	9-5-67	126,303	131,429
A-468	Pavement and Utilities for Cargo Building No. 5	Lowrie Paving Co., Inc.	7-17-67	65,618	69,165
A-469	Improvements and Additions to Mechanical Equipment - South Terminal	C. S. Hardeman, Inc.	6-19-67	14,956	13,460
A-470	Grading for Glide Slope Site - Runway 28L	L. C. Smith Co.	2-27-67	22,988	3,476
A-472	South Terminal Baggage Conveyor Equipment	Mathews Conveyor Co.	3-25-68	51,916	9

(Continued)

TABLE 17 - (Contd.)
SAN FRANCISCO INTERNATIONAL AIRPORT

Contract No.	Description	Contractor	CONSTRUCTION CONTRACTS FISCAL YEAR 1967-68		Original Contract Price	Value of Work Done During Fiscal Year
			Contract Started	Contract Completed		
A-476	Alterations to Communications Center & New Windows and Glazing - 4th Floor Central Terminal	Los Kelley	10-23-67	5-10-68	\$ 39,506	\$ 39,506
A-480R	Increase Capacity of Flight Announcement Selectors - Central Terminal Building	Customusic, Inc.	10-2-67	12-15-67	8,986	8,986
A-481	Relocation of Road R-3	Lowrie Paving Co., Inc.	7-31-67	8-29-67	34,264	30,453
A-486	Pavement for Taxiway G Extension & Pavement Reconstruction Taxiway F	Lowric Paving Co., Inc.	3-25-68		587,550	403,721
A-490	South Terminal Nursery, Now Ceiling & Flooring, Pier G, Improvements to Pier FF	Kenneth K. Lind	10-9-67	5-10-68	41,404	41,404
A-492R	Furnish & Install Entrance Controls, Parking Lot No. 1	Abbott Electric Corp.	8-21-67	1-5-68	7,460	7,460
A-493	Installation of Air Curtain Fans - South Terminal	Eagle Heating Co., Inc.	8-28-67	12-26-67	19,351	19,351
A-494	Installation of Flexible Pipe Connections South Terminal	R. B. McNair & Sons	1-22-68	5-20-68	17,682	18,967

(Continued)

TABLE 17 - (Contd)
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS						
FISCAL YEAR 1967-68						
Contract No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
A-495	Relocation of Roads to Parking Garage	Lowrie Paving Co., Inc.	10-16-67	5-3-68	\$50,585	\$50,585
A-496	Downtown Heliport Passenger Terminal Building	J. M. Construction Co.	9-5-67	2-6-68	42,950	42,950
A-499	Improvement to Parking Garage Second Level Perimeter Curb	Peterson, Rathbun & Moore Construction Co.	5-27-68		38,200	0
A-501	Repair Floor in Room G-52 South Terminal	E. J. Finnerty	7-17-67	11-3-67	4,500	4,018
A-502	New Partitions Room 404 Central Terminal	Pearson & Johnson	8-7-67	9-15-67	4,653	4,653
A-503R	Stairs from South Concourse to Southeast Court Central Terminal	Les Kelley	9-18-67	12-1-67	4,998	4,998
A-504	Alterations to Steam Piping Room 52 - Central Terminal	Dale Plumbing & Heating, Inc.	9-25-67	10-18-67	2,565	2,565
A-505	Asphalt Paving & Sidewalk Sawing - Parking Garage	Lowrie Paving Co., Inc.	2-5-68	2-29-68	2,485	2,390

(Continued)

TABLE 17 - (Contd)
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS FISCAL YEAR 1967-68						
Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
A-506	Furnish and Install Steel Railings, Parking Garage	The Shepard Co.	10-30-67	12-22-67	\$ 6,798	\$ 6,798
A-507	Mechanical Improvements to Parking Garage	Beta Mechanical Contractor	12-4-67	5-15-68	10,450	10,450
A-509	Fill & Pavement for Employees' Parking Lot D	Fisk, Firenze & McLean, Inc.	10-16-67	2-16-68	142,263	147,553
A-510	Fill & Pavement for Mail and Cargo Cart Roads	Fisk, Firenze & McLean, Inc.	3-4-68	5-14-68	83,213	83,876
A-511	Water & Drainage Lines Extension to Road R-21	Wenrick & Associates	1-8-68	.	85,126	56,732
A-513	Construction of Sewage Pumping Station No. 8 & Related Works	Power Construction, Inc.	4-8-68		64,500	59,668
A-517	Station B & 4KV Addition - Central Terminal Building	Brayer Electric Co.	2-12-68		124,777	51,455
A-520	Exterior Cleaning of Piers & Concourses	McL Barnes Co.	2-12-68	5-16-68	9,727	9,727

(Continued)

TABLE 17 - (Contd)
SAN FRANCISCO INTERNATIONAL AIRPORT

CONSTRUCTION CONTRACTS
FISCAL YEAR 1967-68

Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
A-521	Central Terminal Building Flags & Poles - East Side	L. Ph. Bolander & Sons	2-5-68	2-16-68	\$ 1,129	\$1,129
A-522	Sandblast Comparison Panels South Terminal Sidewalk	W. L. Bipes	2-5-68	2-9-68	225	225
A-524	Painting Runway Markings on Runway 1R-19L	Highway Safety Supply	3-11-68	3-20-68	6,960	6,895
A-527R	Surface Treatment for Asphaltic Concrete Pavement	Asphalt Service Co.	3-27-68	4-24-68	4,950	4,950
A-529	Installation of Blast Fence at Gate 27	J. M. Construction Co.	2-5-68	2-28-68	3,190	3,190
A-530	Exterior Lighting, Parking Garage - Central Terminal Bldg.	Civic Electric	4-29-68		22,176	0
A-531	Waterproofing Connectors in Runway Lighting System 28L-10R	St. Francis Electric Service	6-24-68		2,995	0
A-532	Manhole T-1302A at Roads R-1S & R-2	Donardi Construction	4-1-68	5-15-68	2,750	2,750

(Continued)

TABLE 17 - (Contd)

SAN FRANCISCO INTERNATIONAL AIRPORTCONSTRUCTION CONTRACTSFISCAL YEAR 1967-68

Contract No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
A-533	Lighting of Road R-6	Vee's Electric	5-27-68		\$2,774	\$ 0
A-537	Cargo Building No. 3 Partition on Column Line 18	J. M. Construction Co.	4-15-68	4-19-68	1,375	1,375
A-545	Pavement Leveling Pier 7 Area	Lowrie Paving Co., Inc.	5-20-68	5-20-68	1,098	1,202
A-551	Apron Pavement Overlay at Air Cargo Building No. 5	Lowrie Paving Co., Inc.	5-27-68	5-31-68	3,961	4,298

Total Amount of Airport Contract Construction Work Performed During Fiscal Year

\$2,762,673

TABLE 18

MUNICIPAL TRANSIT SYSTEMCONSTRUCTION CONTRACTSFISCAL YEAR 1967-68

Contract No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done Through Fiscal Year
			Started	Completed		
MR-498	Visitors' Facility Cable Car barn	F. W. Jones, Inc.	5-1-67	11-17-67	\$53,926	\$24,856
MR-511	Turk Street Substation Window Screens	The Shepard Co.	7-17-67	9-1-67	6,824	6,824
MR-512	Fencing, Roofing & Repairs at Ventilation Shaft Twin Peaks Tunnel	H. E. Rahlman Co.	8-21-67	10-18-67	6,835	6,835
MR-513	Kirkland Yard Operations Building, Gilley Room - Acoustical Treatment	Pearson & Johnson Contractors	9-7-67	10-17-67	2,856	2,856
MR-514	Geneva Carhouse Improved Lighting	Arc Electric Co.	9-5-67	11-9-67	5,175	5,175
MR-515	Re-Roofing Ocean Bus Yard Service Building	Sunset Roofing & Siding	7-3-67	8-4-67	1,924	1,924
MR-516	Concrete Floor Topping Cable Machinery Plant Washington-Mason Cable Car barn	Love & Haun	7-17-67	12-1-67	50,500	29,000
MR-518	Exterior Painting Kirkland Bus Yard Buildings	C. L. Disheroon Painting Co.	10-2-67	11-15-67	3,391	3,391

(Continued)

TABLE 18 - (Contd)
MUNICIPAL TRANSIT SYSTEM

CONSTRUCTION CONTRACTS						
FISCAL YEAR 1967-68						
Contract No.	Description	Contractor	Contract Time		Original Contract Price	Value of Work Done During Fiscal Year
			Started	Completed		
NR-519	Exterior Painting, 24th and Utah Garage, Bryant St. Substation & Warehouse, Potrero Carhouse, Stevenson St. Substation	J. Wm. Sorensen	8-14-67	2-16-68	\$ 47,080	\$48,262
NR-520	Exterior & Interior Painting, Forest Hill Station Building	W. G. Thompson	5-29-67	8-7-67	12,321	12,648
NR-521	Sandblasting, Waterproofing and Painting, Washington-Mason Cable Carham	Western Waterproofing Co., Inc.	5-22-67	9-29-67	14,540	8,988
NR-522	Relocation of Trolley Coaches Mission to South Van Ness - 16th to 17th Streets	Abbett Electric Corp.	2-13-67		276,031	27,443
NR-523	Roof Repairs, 24th & Utah Garage Machine Shop	Western Roofing Service	4-8-68	5-24-68	19,742	19,742
NR-524	Painting at Eighth & Geary Substation	D. Zelinsky & Sons, Inc.	11-13-67	2-13-68	4,335	4,335
NR-526	Removal of Steel & Concrete Trolley Poles at Various Locations in San Francisco	Lowrie Paving Co., Inc.	8-14-67	12-26-67	3,555	2,258

(Continued)

TABLE 18 - (Contd.)
MUNICIPAL TRANSIT SYSTEM

CONSTRUCTION CONTRACTS
FISCAL YEAR 1967-68

Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
NR-553	Embarcadero Plaza Terminal (Under DPW Contract 22816)	Mitchell Plumbing Co.	3-11-68		\$116,539	\$ 30,043
NR-554	Interior Painting Geary Office Building	J. Wm. Sorensen	5-27-68		11,400	0
NR-555	Repairing Presidio Trolley Coach Yard	McGuire & Hester	1-22-68		61,677	53,553
NR-540A	No. 47 Trolley Coach Detour from Army to 25th Street	Abbott Electric Corp.	6-24-68		13,774	0
NR-544	Interior Painting Potrero Carhouse Building	J. Wm. Sorensen, Inc.	6-3-68		6,362	5,727
NR-545	Buildings at Kirkland Yard Interior Painting	Borardi & Franklin Paint Co.	3-25-68	5-23-68	1,582	1,502
NR-551	Replacement of Trolley Coach Overhead 18th St. at Southern Freeway	Steiny & Mitchel, Inc.	4-22-68		15,557	15,402
Total Amount of Municipal Transit System Contract Construction Work Performed During Fiscal Year						\$311,430

